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PERFORMANCE CHARACTERISTICS OF AUTOMOTIVE ENGINES IN THE UNITED STATES

Third Series - Report No. 4

1978 Pontiac, 151 CID (2.5 Liters), 2V

D.E. Koehler
W.F. Marshall

U.S. DEPARTMENT OF ENERGY
BARTLESVILLE ENERGY TECHNOLOGY CENTER
P.O. Box 1398
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DEPARTMENT OF
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INTERIM REPORT

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U.S. DEPARTMENT OF TRANSPORTATION
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16. Abstract

Experimental data were obtained in dynamometer tests of a 1978 Pontiac 151 CID engine to determine fuel consumption and emissions (hydrocarbon, carbon monoxide, oxides of nitrogen) at steady-state engine operating modes. The objective of the program is to obtain engine performance data for estimating emissions and fuel economy for varied engine service and duty. The intent of the work is to provide basic engine characteristic data required as input for engineering calculations involving ground transportation.

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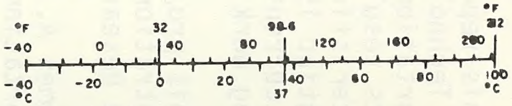
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
		MASS (weight)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



1. INTRODUCTION

The objective of this program is to obtain engine performance data for estimating fuel economy and emissions for varied engine service and duty. The intent of this work, done at Bartlesville Energy Technology Center, is to provide basic engine characteristic data required as input for engineering calculations of fuel consumption and emissions involving ground transportation.

The data acquired from tests of a 1978 Pontiac 151 CID engine are presented in this report. This engine was intended for use in a forty-nine state (Federal) vehicle equipped with automatic transmission. Pontiac uses the 151 CID engine in vehicles in the 3,000 to 3,500 lb weight class. The test results are sufficient to establish steady-state maps for fuel consumption and emissions (carbon monoxide, unburned hydrocarbon, and oxides, of nitrogen) over the entire operating range of the engine.

2. ENGINE TEST PROCEDURE

The engine tests setup included a complete mean tolerance engine (SAE definition) except that the fan was not included and a cooling tower was used in place of the fan and radiator. The alternator was included but was not wired into the engine's electrical system. Emission control systems included exhaust-gas-recirculation, early fuel evaporation, positive crankcase ventilation, and an oxidation catalyst. The manufacturer's engine specificiations are listed in Table 1.

Prior to testing, engine break-in consisted of 40 hours of operation at various speeds and loads representative of normal operation. Table 2 contains details of the break-in schedule. A single batch of unleaded regular grade gasoline was used throughout the break-in and test. A detailed fuel analysis is given in Table 3. Engine tests began on January 24, 1978 and ended February 27, 1978. During steady-state testing, the engine was operated at the following speed/load modes:

Speeds: 1,000; 1,500; 2,000; 2,500; 2,800; 3,200; 3,800; and 4,400 rpm

Loads: 0, 10, 25, 40, 60, 75, 90, 100 pct of full load (0, 10, 25, 60, and 75 pct points were repeated for all engine speeds)

Idle speed/load modes: 650 rpm -- 0, 10, 15 lb-ft
550 rpm -- 10 lb-ft

Over speed point: 4,650 rpm -- 109 lb-ft (WOT)

Total number of test modes..............	68
Total number of repeats..................	61
Total number of tests..................	129

The following data were recorded for each test point:

Test number
Date
Barometric pressure, mm Hg
Dew point, °F
Inlet air temperature, °F
Speed, rpm
Torque, lb-ft -- Daytronic strain gauge load cell
Fuel rate, lb/hr -- Fluidyne positive displacement fuel flow meter
Ignition timing, °BTC
Manifold vacuum, in. Hg
Throttle angle, degrees

CO, pct -- Beckman NDIR
CO_2, pct -- Beckman NDIR
O_2, pct -- Beckman polarographic detector
HC, ppmC -- Custom-built heated flame ionization detector
NO_x, ppm -- Thermo-Electron chemiluminescent detector
Oil temperature, °F
Oil pressure, psig
Coolant temperature, °F
Exhaust temperature, °F
Exhaust pressure, in. H_2O
Intake manifold temperature, °F
Exhaust-gas-recirculation rate as determined by the intake manifold, CO_2

The following equations were used in calculating power, air/fuel ratio, absolute humidity, and mass emission rates of carbon monoxide (CO), unburned hydrocarbons (HC), and oxides of nitrogen (NO_x):

1. Partial pressure of water vapor in intake air (millimeters of mercury):

$$P = \exp\left[18.717 - \frac{7308.1}{393 + D}\right]$$

where D = Dew point, °F

2. Absolute humidity (grains moisture per pound dry air):

$$H = \frac{4347.8(P)}{B - P}$$

where B = Barometric pressure, mm Hg

3. Humidity correction factor (dimensionless):

$$K_H = \frac{1}{1 - 0.0047(H - 75)}$$

Note: This factor is used to correct the NO_x mass emission rate to a standard humidity of 75 grains moisture per pound dry air.

4. Stoichiometric air/fuel ratio (dimensionless):

$$AF_s = \frac{69(2 + \frac{x}{2} - y)}{MW_{fuel}}$$

where x = hydrogen-carbon ratio of fuel
y = oxygen-carbon ratio of fuel
MW_{fuel} = fuel molecular weight per carbon atom
= $12.01115 + 1.00797x + 16.00000y$

5. Hydrogen concentration in raw exhaust (percent):

$$H_2 = \frac{x(CO)(CO + CO_2)}{2(CO + 3CO_2)}$$

where CO = Carbon monoxide concentration (percent)
CO_2 = Carbon dioxide concentration (percent)

Note: This equation assumes a water-gas shift equilibrium constant

$$\frac{(CO)(H_2O)}{(CO_2)(H_2)} = 3$$

6. Correction factor for emission concentrations from wet basis to dry basis (dimensionless):

$$C_w = 1 + \frac{(\frac{x}{2})(CO + CO_2) - H_2}{100}$$

Note: In these tests only HC is measured on a wet basis. All other species are measured on a dry basis.

7. Air/Fuel ratio (dimensionless):

$$AF = \frac{AF_s}{2 + \frac{x}{2} - y} \left[\frac{(1 + \frac{x}{2} - y)(CO) + (2 + \frac{x}{2} - y)(CO_2) + 2(O_2) + \frac{NO_x}{10^4} - H_2}{CO + CO_2 + C_w\,(\frac{HC}{10^4})} \right]$$

where O_2 = oxygen concentration (percent)
NO_x = oxides of nitrogen (ppm)
HC = unburned hydrocarbon concentration (ppmC)

8. Exhaust flow (pounds per hour):

$$M_{EX} = M_F(1 + AF)$$

where M_F = fuel flow rate (pounds per hour)

9. Carbon monoxide mass emission rate (grams per hour):

$$M_{CO} = \left(\frac{MW_{CO}}{MW_f}\right)\left[\frac{(\%CO)(M_f)}{\%CO + \%CO_2 + C_w(\%HC)}\right](453.59237)$$

MW_{CO} = molecular weight of CO (28.01115)
MW_f = molecular weight of fuel (12.01115 + 1.00797x + 16.00000y)
M_f = fuel rate in lbs/hour
$\%HC$ = $HC(ppm)/10^4$

10. Unburned hydrocarbon mass emission rate (grams per hour):

$$M_{HC} = \left(\frac{MW_{HC}}{MW_f}\right)\left[\frac{(\%HC)(M_f)(C_w)}{\%CO + \%CO_2 + C_w(\%HC}\right](453.59237)$$

MW_{HC} = molecular weight of hydrocarbon = 12.01115 + 1.00797x + 16.00000y

11. Oxides of mitrogen mass emission rate (grams per hour):

$$M_{NO_x} = \left(\frac{MW_{NO_x}}{MW_f}\right)\left[\frac{\%NO_x + M_f}{\%CO + \%CO_2 + C_w(\%HC)}\right](453.59237)$$

MW_{NO_x} = molecular weight of NO_2 = 46.0055

12. Power (brake horsepower corrected to a standard barometric pressure of 736.6 mm Hg and a standard temperature of 85° F):

$$HP = \left(\frac{N\ (T)}{5252.113}\right)\left(\frac{736.6}{B - P}\right)\sqrt{\frac{t + 460}{545}}$$

where N = engine speed (revolutions per minute)
T = brake torque (lb-Ft)
t = air temperature (°F)
B = barometric pressure (mm Hg)
P = partial pressure of water vapor in intake air (mm Hg)

3. DISCUSSION OF TEST RESULTS

Maximum corrected brake horsepower, maximum torque, and brake specific fuel consumption (bsfc) are plotted as a function of engine speed at wide-open-throttle (WOT) (Figure 1). The maximum brake horsepower produced by the engine exceeded the value quoted in Table 1. The maximum torque produced was similar to the value quoted in Table 1 and was produced at the specified speed. Fuel rates were found to be nearly a linear function of power for all speeds (Figure 2). Fuel rates were repeatable for all speeds duplicated.

Air-fuel ratios are plotted as a function of power for all engine speeds (Figure 3). The air-fuel ratios were repeatable for most engine test modes. Additional tests were made at certain test modes due to the non-repeatability of the air-fuel ratios. The results from the additional testing indicate that the modes are at critical operating conditions; thus causing significant differences in air-fuel ratios.

Emissions of carbon monoxide (CO), hydrocarbon (HC), and oxides of nitrogen (NO_x) are plotted as a function of power for all engine speeds (Figures 4, 5, 6). Emissions of CO and HC were effectively controlled by the oxidation catalyst at all speed/load modes except those at and near WOT operation. Emissions of NO_x tended to peak at approximately 60 to 90 percent of maximum power at each speed and were repeatable for most speeds duplicated.

4. CONCLUSIONS

The experimental work to obtain engine performance data for a 1978 Pontiac 151 CID engine has been completed, and these data are presented in the tables accompanying this report.

TABLE 1. MANUFACTURER'S ENGINE SPECIFICATIONS

Displacement, cubic inches	151
Maximum horsepower, bhp @ 4,400 rpm	85
Maximum torque, lb-ft @ 2,800 rpm	123
Bore and stroke, inches	4.00 - 3.00
Configuration	in-line 4 cylinder
Compression ratio	8.3 to 1
Firing order	1-3-4-2
Ignition timing at idle speed, °BTDC @ 1,000 rpm	12
Block material	cast iron alloy
Head material	cast iron alloy
Number of crankshaft main bearings	5
Number of compression rings/piston	2
Number of oil rings/piston	1
Cam drive type	gear drive
Valve lift:	
Intake, inches	0.406
Exhaust, inches	0.406
Valve timing:	
Intake opens, °BTC	33
Intake closes, °ABC	81
Exhaust opens, °BBC	76
Exhaust closes, °ATC	38
Spark plug gap, inches	0.06
Exhaust-gas-recirculation system:	
Valve type	vacuum modulated shut-off and metering
Control signal	carburetor vacuum
Point of discharge	intake manifold
Crankcase emission control:	
Control method	positive crankcase ventilation
Point of discharge	intake manifold
Carburetor type	2V downdraft
Distributor specifications:*	
Centrifugal advance, begins, ° @ 1,200 rpm	0
Centrifugal advance, full, ° @ 4,400 rpm	20
Vacuum advance, begins, ° @ 3.5 in. Hg	0
Vacuum advance, maximum, ° @ 9 in. Hg	20
Carburetor number	10004048
Distributor number	1103328
EGR valve number	17057046
Engine weight, lb	350

*Engine rpm, crankshaft degrees.

TABLE 2. ENGINE BREAK-IN SCHEDULE

Simulated vehicle speed, mph	Engine speed, rpm	Intake manifold vacuum, in Hg	Fraction of time in mode
0	650	15.8	1/10
20	1,400	17.7	"
30	1,450	10.1	"
40	1,850	10	"
50	2,250	9.2	"
60	2,650	7.5	"
25	1,700	12.6	"
35	1,650	9.8	"
45	2,025	9.6	"
55	2,450	8.3	"

Mileage per cycle = 90.
Total mileage simulated over 40 hours break-in period = 1,440.

TABLE 3. FUEL ANALYSIS

Fuel No	7718
Research octane No	91.8
Motor octane No	84.0
Specific gravity	0.717
API gravity, degrees	65.9
Distillation, °F:	
10 pct evaporated	123
50 pct "	209
95 pct "	402
100 pct "	413
Reid vapor pressure, psi	11.26
FIA analysis, pct:	
Aromatics	9
Olefins	15
Paraffins	76
Sulfur, pct	0.016
Lead, grams per gallon	Trace
Hydrogen/carbon atomic ratio	2.038

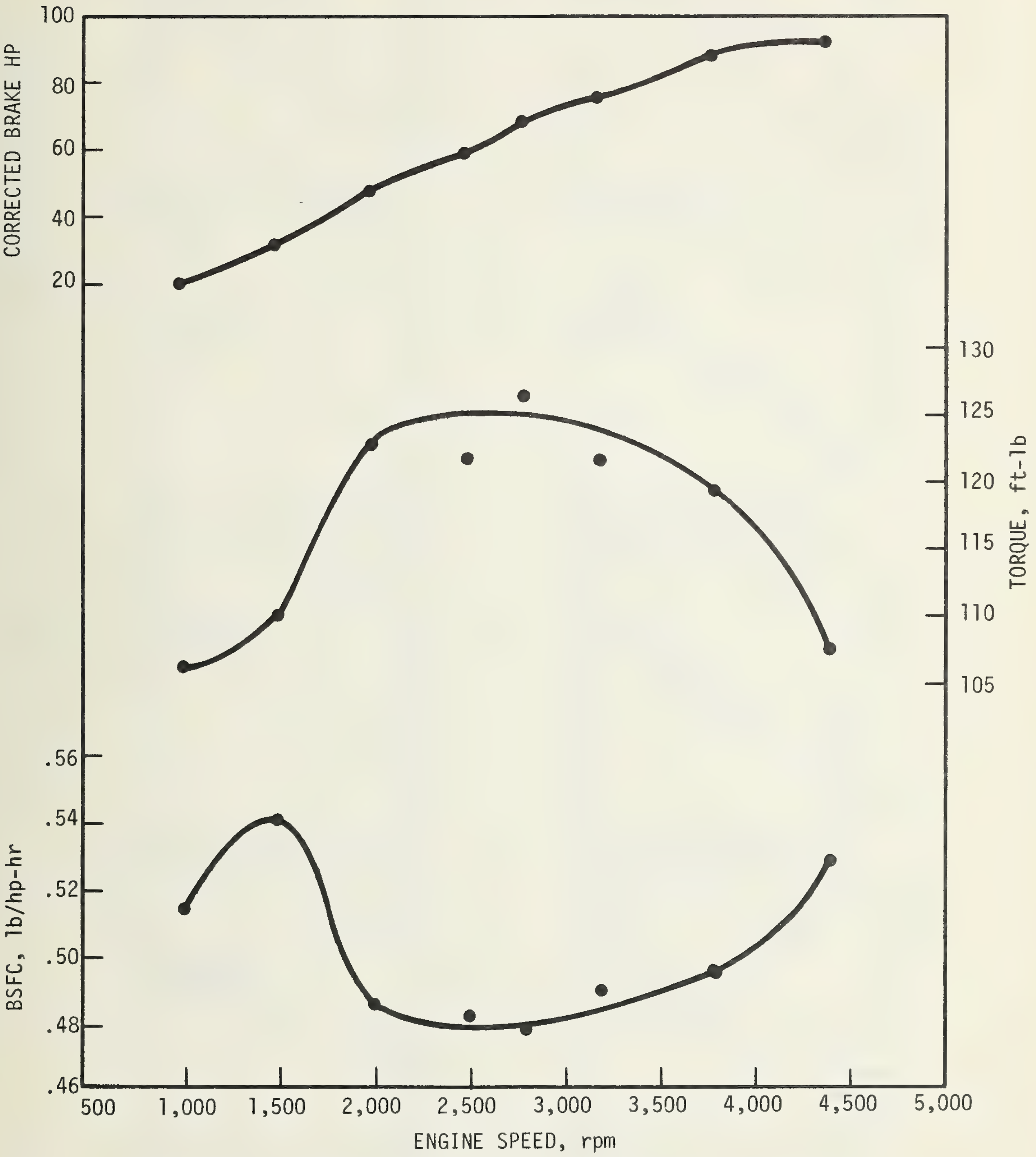


FIGURE 1. Brake Specific Fuel Consumption, Torque, and Brake Horsepower Versus Engine rpm at Wide-Open Throttle--Pontiac 151 CID Engine.

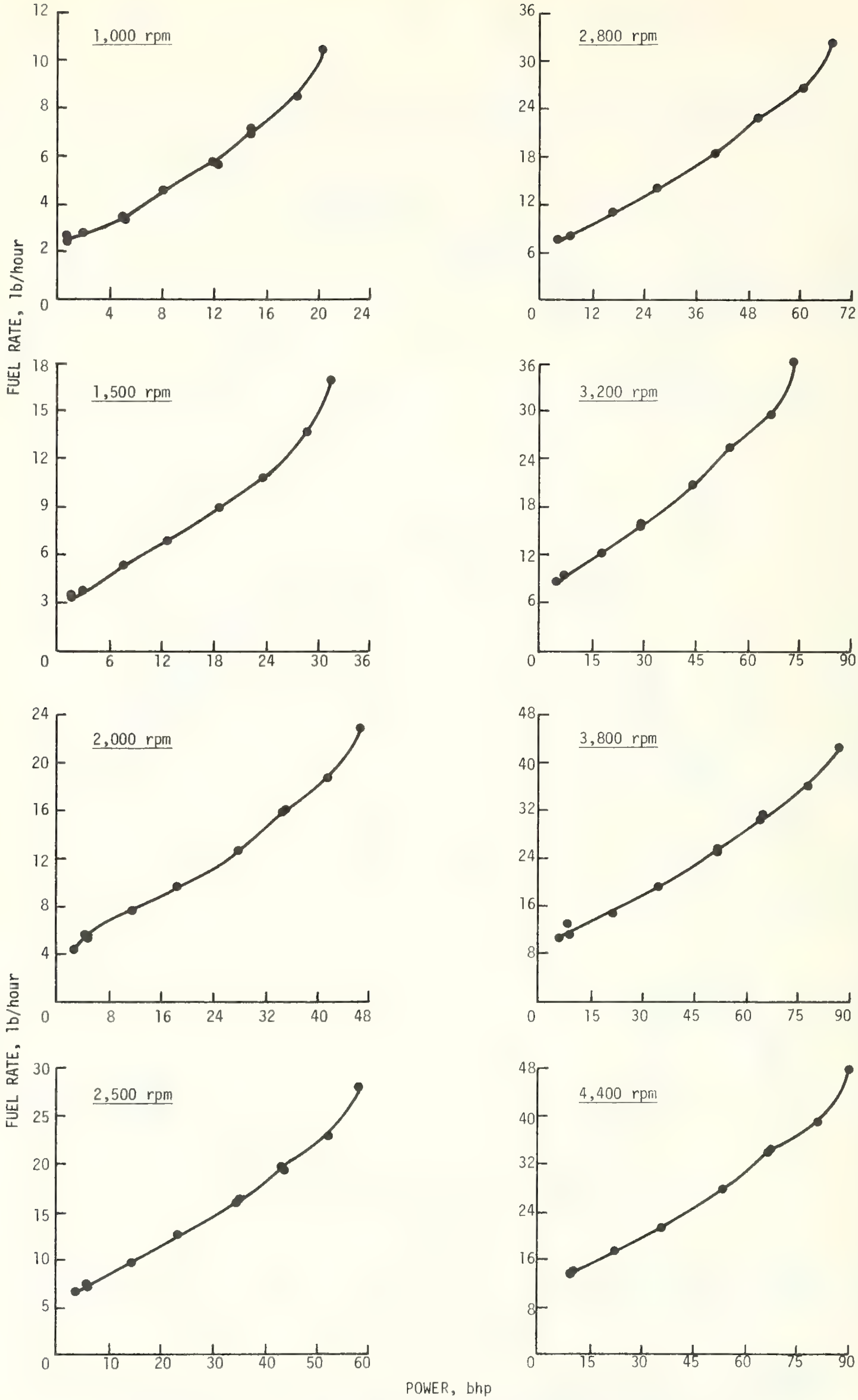


FIGURE 2. Fuel Rate Versus Power at Various Speed and Load Conditions--Pontiac 151 CID Engine.

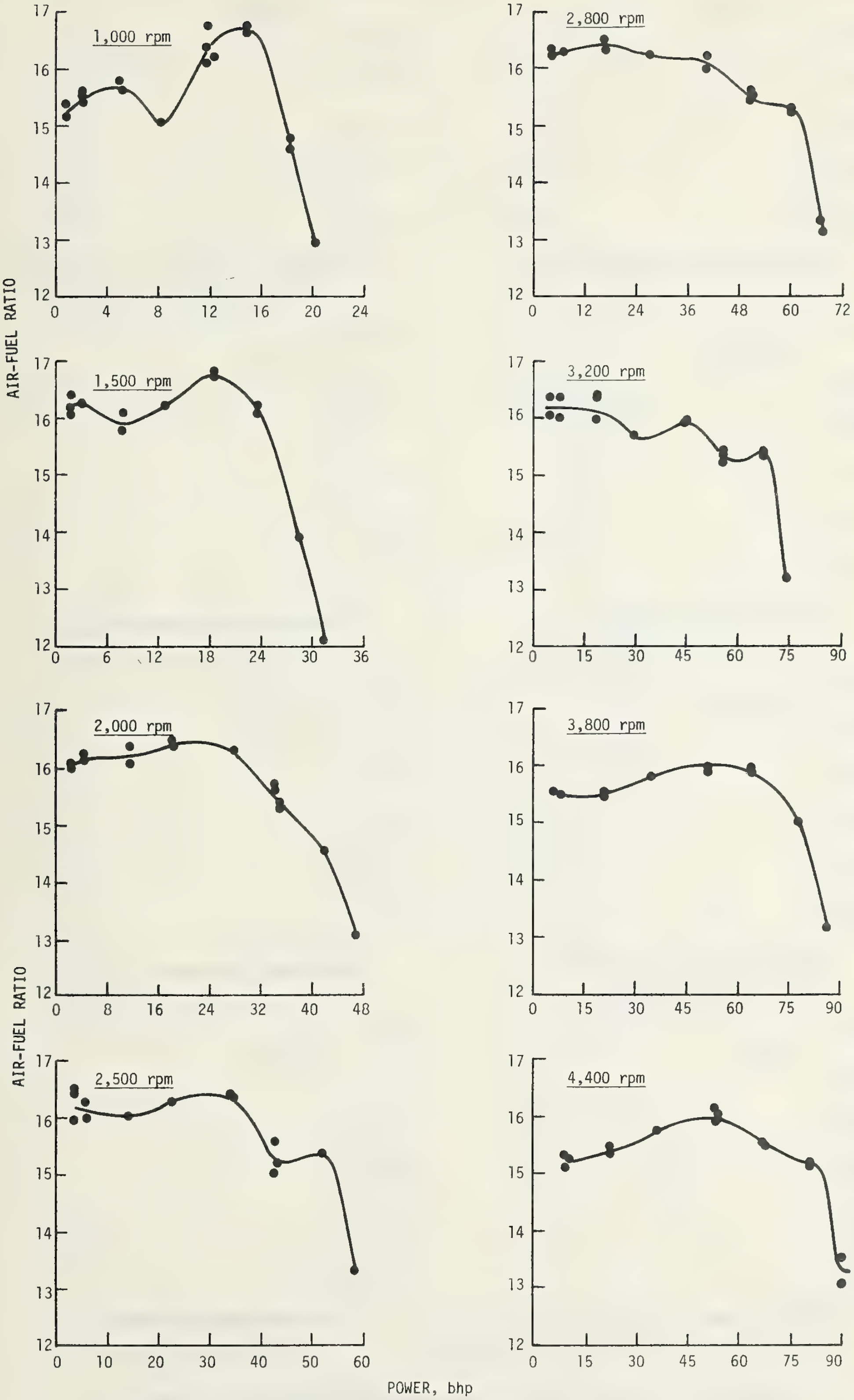


FIGURE 3. Air Fuel Ratio Versus Power at Various Speed and Load Conditions--Pontiac 151 CID Engine.

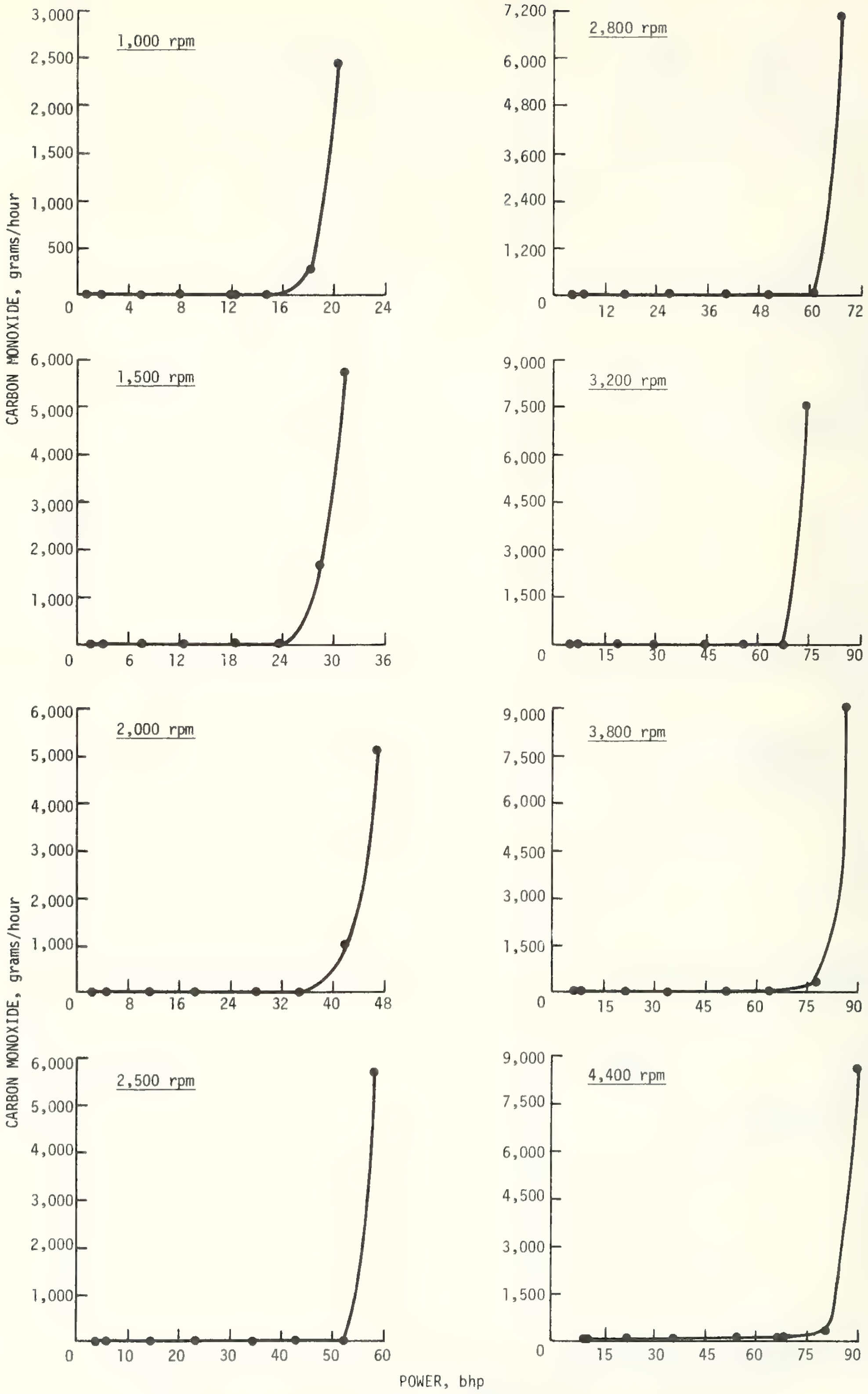


FIGURE 4. Carbon Monoxide Emissions Versus Power at Various Speed and Load Conditions--Pontiac 151 CID Engine.

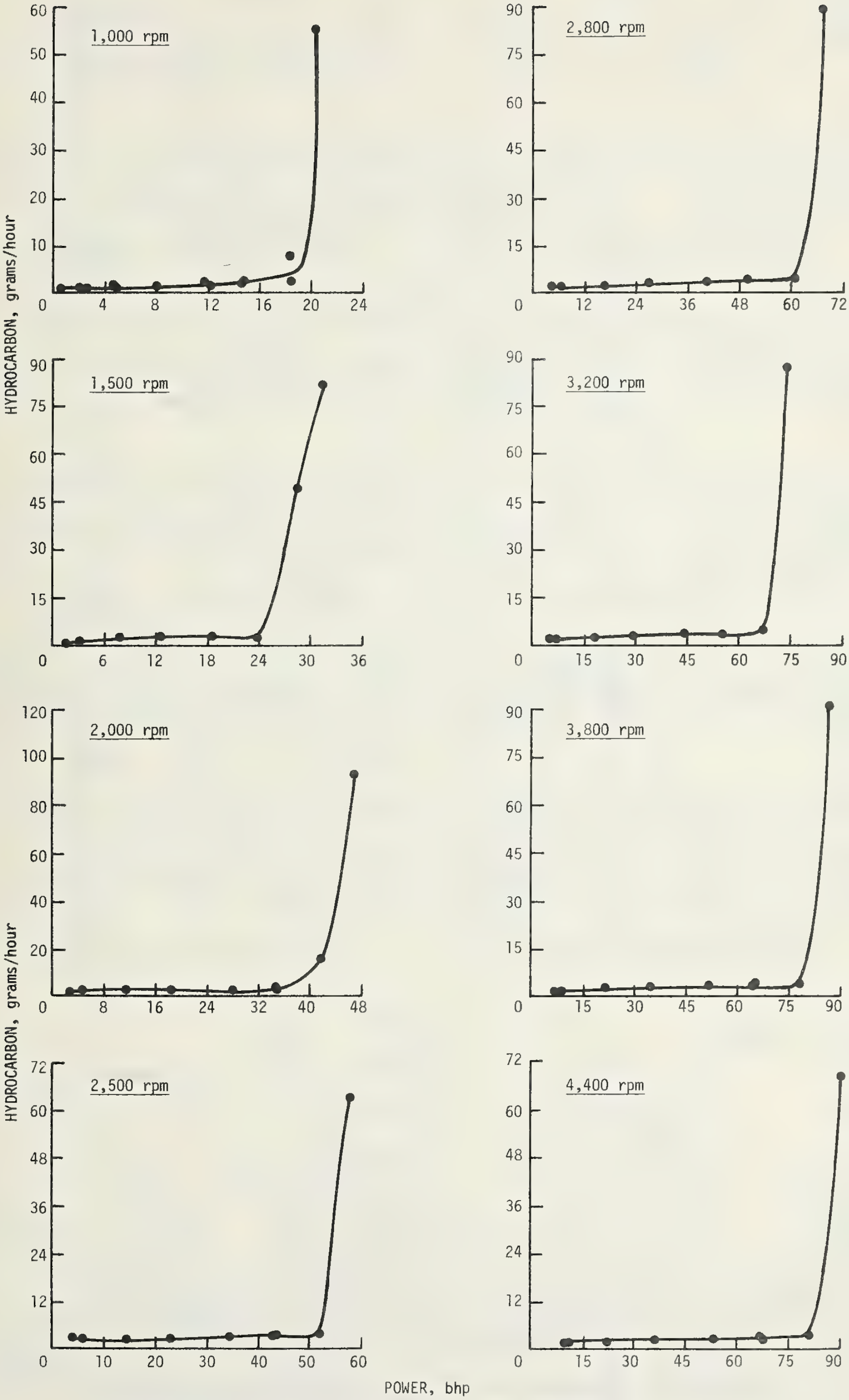


FIGURE 5. Hydrocarbon Emissions Versus Power at Various Speed and Load Conditions--Pontiac 151 CID Engine.

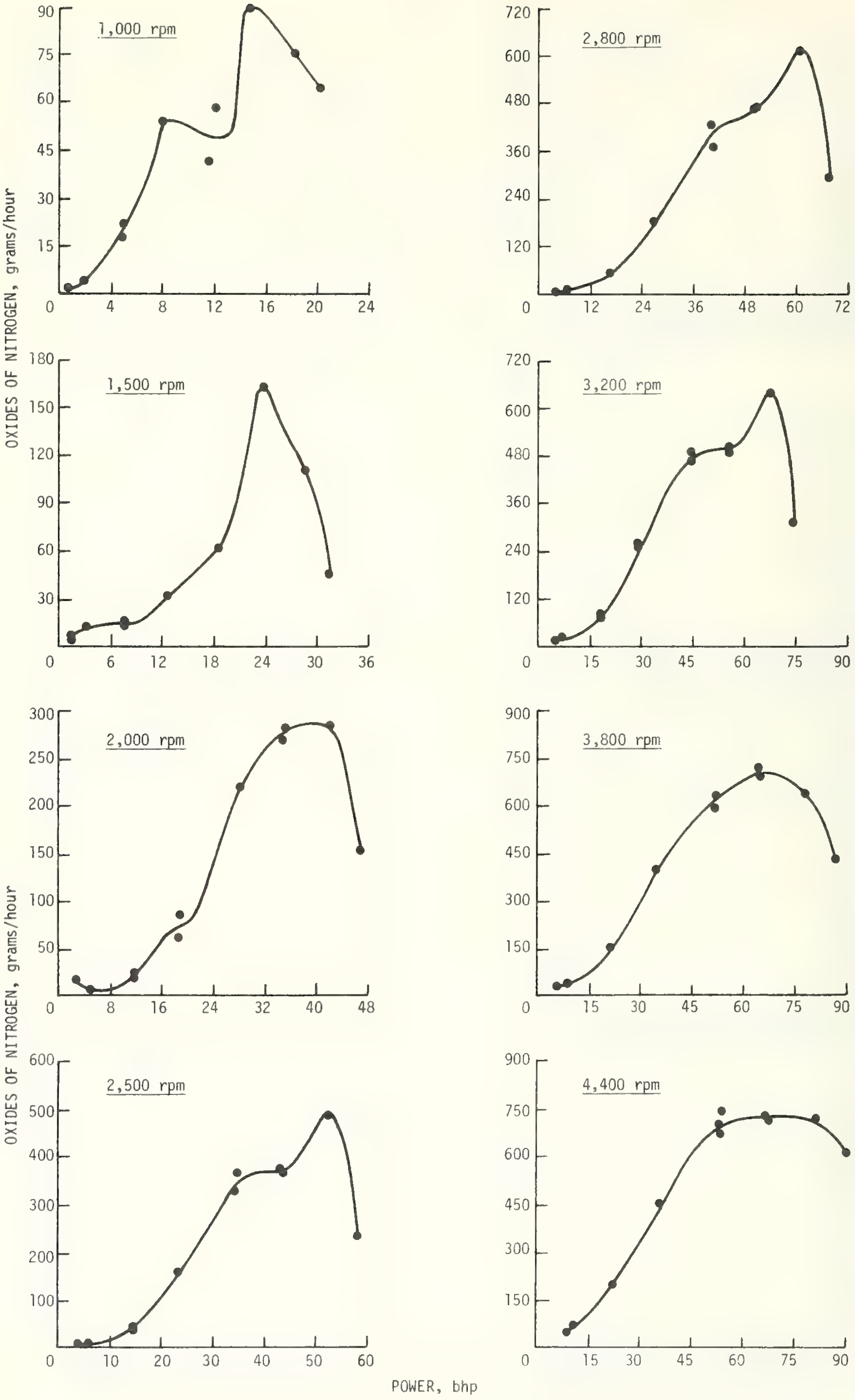


FIGURE 6. Oxides of Nitrogen Emissions Versus Power at Various Speed and Load Conditions--Pontiac 151 CID Engine.

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	1.01	1.02	2.01	2.02	3.01	3.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/24/78	1/24/78	1/24/78	1/24/78	1/24/78	1/24/78
BAROMETER, MMHG	740.5	740.5	740.5	740.5	740.5	740.5
HUMIDITY, GRAINS/LB	37	37	37	37	37	37
TEMPERATURE, F	84	84	80	80	80	80
ENGINE SPEED, RPM	650	650	650	650	650	650
TORQUE, FT-LB	3.2	3.2	8.0	8.0	15.0	15.0
POWER, BHP*	.4	.4	1.0	1.0	1.8	1.8
FUEL RATE, LB/HR	1.5	1.5	2.0	2.0	2.1	2.1
IGNITION TIMING, DEG BTDC	14.0	14.0	14.0	14.0	14.0	14.0
MANIFOLD VACUUM, IN HG	18.6	18.6	18.0	18.0	17.0	17.0
THROTTLE ANGLE, DEG	.0	.0	.8	.8	1.2	1.2
INTAKE MAN. TEMP., F	192	192	161	161	152	152
CONCENTRATIONS, DRY BASIS						
CO, %	.1515	.0076	.2419	.0386	.4936	.5564
CO2, %	13.75	14.05	14.39	14.90	14.55	14.64
O2, %	1.85	1.23	.81	.27	.56	.34
HC, PPMC	3417	244	3407	613	3664	3490
NOX, PPM	65	49	97	24	156	107
AIR/FUEL RATIO	15.66	15.64	14.90	14.91	14.61	14.46
EMISSION RATES, G/HR						
CO	14.6	.7	29.6	4.7	60.3	69.2
HC	16.5	1.1	20.9	3.8	22.5	21.8
NOX+	.9	.6	1.7	.4	2.7	1.9
OIL TEMPERATURE, F	189	189	178	178	176	176
OIL PRESSURE, PSI	17	17	19	19	20	20
COOLANT TEMPERATURE, F	186	186	186	186	186	186
EXHAUST PRESSURE, IN. H2O	1.0	.0	1.0	.0	.0	.0
EXHAUST TEMPERATURE, F	589	590	542	541	543	482

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	4.01	4.02	5.01	5.02	6.01	6.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/24/78	1/24/78	1/24/78	1/24/78	1/24/78	1/24/78
BAROMETER, MMHG	740.5	740.5	740.5	740.5	740.5	740.5
HUMIDITY, GRAINS/LB	37	37	37	37	37	37
TEMPERATURE, F	80	80	78	78	79	79
ENGINE SPEED, RPM	550	550	1000	1000	1000	1000
TORQUE, FT-LB	11.0	11.0	107.6	107.6	96.9	96.9
POWER, BHP*	1.1	1.1	20.3	20.3	18.3	18.3
FUEL RATE, LB/HR	1.5	1.6	10.5	10.4	8.5	8.4
IGNITION TIMING, DEG BTDC	14.0	14.0	14.0	14.0	14.0	14.0
MANIFOLD VACUUM, IN HG	17.9	17.9	.1	.1	2.5	2.5
THROTTLE ANGLE, DEG	.0	.0	76.0	76.0	25.0	25.0
INTAKE MAN. TEMP., F	149	149	126	126	158	158
CONCENTRATIONS, DRY BASIS						
CO, %	.9985	.9589	4.3216	4.2441	.6261	.5880
CO2, %	14.18	13.98	12.17	12.04	14.27	14.49
O2, %	.39	.33	.21	.10	.45	.10
HC, PPMC	4689	4456	2472	1919	1464	311
NOX, PPM	71	48	1065	807	2246	1075
AIR/FUEL RATIO	14.19	14.18	12.96	12.94	14.76	14.62
EMISSION RATES, G/HR						
CO	87.6	88.8	2439.3	2428.4	321.1	294.4
HC	20.7	20.7	70.1	55.2	37.7	7.8
NOX+	.9	.6	84.0	64.6	161.1	75.2
OIL TEMPERATURE, F	179	179	173	173	203	203
OIL PRESSURE, PSI	15	15	30	30	26	26
COOLANT TEMPERATURE, F	186	186	190	190	188	188
EXHAUST PRESSURE, IN. H2O	.0	.0	5.0	1.0	2.0	.0
EXHAUST TEMPERATURE, F	489	409	960	881	986	874

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	7.01	7.02	8.01	8.02	9.01	9.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	2/ 2/78	2/ 2/78	1/24/78	1/24/78	1/24/78	1/24/78
BAROMETER, MMHG	753.1	753.1	740.5	740.5	740.5	740.5
HUMIDITY, GRAINS/LB	15	15	37	37	37	37
TEMPERATURE, F	63	63	82	82	83	83
ENGINE SPEED, RPM	1000	1000	1000	1000	1000	1000
TORQUE, FT-LB	80.7	80.1	64.6	64.6	43.0	43.0
POWER, BHP*	14.8	14.7	12.2	12.2	8.1	8.1
FUEL RATE, LB/HR	.1	.1	5.7	5.7	4.6	4.6
IGNITION TIMING, DEG BTDC	21.0	21.0	29.0	29.0	35.0	35.0
MANIFOLD VACUUM, IN HG	4.0	4.0	5.5	5.5	12.5	12.5
THROTTLE ANGLE, DEG	19.0	19.0	14.0	14.0	8.5	8.5
INTAKE MAN. TEMP., F	132	132	173	173	172	172
CONCENTRATIONS, DRY BASIS						
CO, %	.0559	.0008	.0669	.0076	.3793	.0360
CO2, %	13.35	13.57	13.68	13.92	14.62	15.40
O2, %	2.58	2.42	2.15	1.94	.78	.33
HC, PPMC	1375	84	1719	89	1981	100
NOX, PPM	1504	1508	1230	1121	2408	1426
AIR/FUEL RATIO	16.56	16.61	16.16	16.20	15.04	15.04
EMISSION RATES, G/HR						
CO	.3	.0	24.9	2.8	102.8	9.7
HC	.3	.0	32.1	1.7	27.0	1.3
NOX+	.9	.9	63.9	58.2	91.2	53.8
OIL TEMPERATURE, F	196	196	203	203	202	202
OIL PRESSURE, PSI	28	28	26	26	26	26
COOLANT TEMPERATURE, F	191	191	190	190	191	191
EXHAUST PRESSURE, IN. H2O	3.0	.0	1.0	.0	1.0	.0
EXHAUST TEMPERATURE, F	915	783	865	820	803	779

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	10.01	10.02	11.01	11.02	12.01	12.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/24/78	1/24/78	1/24/78	1/24/78	1/24/78	1/24/78
BAROMETER, MMHG	740.5	740.5	740.5	740.5	740.5	740.5
HUMIDITY, GRAINS/LB	37	37	37	37	37	37
TEMPERATURE, F	83	83	83	83	83	83
ENGINE SPEED, RPM	1000	1000	1000	1000	1000	1000
TORQUE, FT-LB	26.9	26.9	10.8	10.8	4.2	4.2
POWER, BHP*	5.1	5.1	2.0	2.0	.8	.8
FUEL RATE, LB/HR	3.4	3.4	2.8	2.9	2.4	2.5
IGNITION TIMING, DEG BTDC	23.0	23.0	14.0	14.0	14.0	14.0
MANIFOLD VACUUM, IN HG	16.5	16.5	18.0	18.0	19.5	19.5
THROTTLE ANGLE, DEG	5.5	5.5	4.0	4.0	3.0	3.0
INTAKE MAN. TEMP., F	163	163	157	157	155	155
CONCENTRATIONS, DRY BASIS						
CO, %	.0079	.0079	.1483	.0074	.2662	.0074
CO2, %	14.24	14.24	13.80	14.12	14.08	14.68
O2, %	1.15	1.15	1.41	1.11	1.19	.85
HC, PPMC	113	113	1320	109	1460	122
NOX, PPM	720	720	193	178	111	107
AIR/FUEL RATIO	15.61	15.61	15.59	15.57	15.35	15.37
EMISSION RATES, G/HR						
CO	1.7	1.7	27.0	1.4	40.6	1.1
HC	1.2	1.2	12.1	1.0	11.2	.9
NOX+	22.0	22.0	4.9	4.6	2.4	2.3
OIL TEMPERATURE, F	199	199	196	196	193	193
OIL PRESSURE, PSI	26	26	28	28	28	28
COOLANT TEMPERATURE, F	191	191	191	191	186	186
EXHAUST PRESSURE, IN. H2O	.0	.0	.0	.0	.0	.0
EXHAUST TEMPERATURE, F	730	730	737	655	708	609

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	13.01	13.02	14.01	14.02	15.01	15.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/25/78	1/25/78	1/24/78	1/24/78	1/25/78	1/25/78
BAROMETER, MMHG	740.3	740.3	740.5	740.5	740.3	740.3
HUMIDITY, GRAINS/LB	25	25	37	37	25	25
TEMPERATURE, F	74	74	83	83	77	77
ENGINE SPEED, RPM	1500	1500	1500	1500	1500	1500
TORQUE, FT-LB	113.0	113.0	101.1	101.1	84.7	84.7
POWER, BHP*	31.5	31.5	28.6	28.6	23.6	23.6
FUEL RATE, LB/HR	17.0	17.1	13.7	13.7	10.9	10.8
IGNITION TIMING, DEG BTDC	17.0	17.0	17.0	17.0	21.0	21.0
MANIFOLD VACUUM, IN HG	.1	.1	2.5	2.5	3.2	3.2
THROTTLE ANGLE, DEG	76.0	76.0	33.0	33.0	28.5	28.0
INTAKE MAN. TEMP., F	129	132	162	162	158	158
CONCENTRATIONS, DRY BASIS						
CO, %	6.4700	6.5100	2.1979	2.2364	.0920	.0080
CO2, %	11.06	10.90	13.94	14.30	13.38	13.74
O2, %	.17	.08	.21	.10	2.03	1.68
HC, PPMC	2452	1855	1691	1332	884	67
NOX, PPM	567	405	1316	1072	1576	1729
AIR/FUEL RATIO	12.13	12.07	13.92	13.88	16.20	16.07
EMISSION RATES, G/HR						
CO	5589.5	5701.6	1664.3	1656.6	66.6	5.7
HC	106.4	81.6	64.3	49.6	32.1	2.4
NOX+	65.3	47.2	139.3	111.0	152.2	163.2
OIL TEMPERATURE, F	197	197	244	244	220	220
OIL PRESSURE, PSI	30	30	30	30	30	30
COOLANT TEMPERATURE, F	191	191	188	188	191	191
EXHAUST PRESSURE, IN. H2O	15.0	2.0	12.0	.0	10.0	.0
EXHAUST TEMPERATURE, F	1096	1031	1134	1046	1120	1027

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	16.01	16.02	17.01	17.02	18.01	18.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/27/78	1/27/78	1/25/78	1/25/78	1/25/78	1/25/78
BAROMETER, MMHG	755.4	755.4	740.3	740.3	740.3	740.3
HUMIDITY, GRAINS/LB	30	30	25	25	25	25
TEMPERATURE, F	67	67	81	81	85	85
ENGINE SPEED, RPM	1500	1500	1500	1500	1500	1500
TORQUE, FT-LB	67.8	67.8	45.2	45.2	28.1	28.1
POWER, BHP*	18.6	18.6	12.6	12.6	7.8	7.8
FUEL RATE, LB/HR	.1	.1	6.9	6.9	5.4	5.4
IGNITION TIMING, DEG BTDC	26.0	26.0	37.0	37.0	37.0	37.0
MANIFOLD VACUUM, IN HG	5.5	5.5	9.0	9.0	14.0	14.0
THROTTLE ANGLE, DEG	21.0	21.0	14.5	14.5	10.0	10.0
INTAKE MAN. TEMP., F	147	147	192	192	191	191
CONCENTRATIONS, DRY BASIS						
CO, %	.0697	.0075	.0684	.0076	.1631	.0076
CO2, %	12.39	12.75	13.18	13.46	13.35	13.70
O2, %	2.78	2.48	2.26	1.85	1.70	1.34
HC, PPMC	1434	92	2193	116	2197	133
NOX, PPM	693	724	512	526	375	346
AIR/FUEL RATIO	16.80	16.73	16.20	16.16	15.73	15.76
EMISSION RATES, G/HR						
CO	.5	.0	31.6	3.5	58.3	2.7
HC	.5	.0	50.8	2.7	39.5	2.4
NOX+	.6	.6	31.5	32.6	17.9	16.3
OIL TEMPERATURE, F	213	213	218	218	214	214
OIL PRESSURE, PSI	30	30	30	30	30	30
COOLANT TEMPERATURE, F	191	191	192	192	191	191
EXHAUST PRESSURE, IN. H2O	9.0	.0	2.0	.0	1.0	.0
EXHAUST TEMPERATURE, F	1068	1031	962	942	918	874

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	19.01	19.02	20.01	20.02	21.01	21.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/27/78	1/27/78	1/25/78	1/25/78	1/25/78	1/25/78
BAROMETER, MMHG	755.4	755.4	740.3	740.3	740.3	740.3
HUMIDITY, GRAINS/LB	30	30	25	25	25	25
TEMPERATURE, F	56	56	83	83	72	72
ENGINE SPEED, RPM	1500	1500	1500	1500	2000	2000
TORQUE, FT-LB	11.3	11.3	5.8	5.8	126.0	126.0
POWER, BHP*	3.1	3.1	1.6	1.6	46.8	46.8
FUEL RATE, LB/HR	.0	.0	3.3	3.4	22.8	22.7
IGNITION TIMING, DEG BTDC	37.0	37.0	28.0	28.0	20.0	20.0
MANIFOLD VACUUM, IN HG	20.0	20.0	20.5	20.5	.5	.5
THROTTLE ANGLE, DEG	5.5	5.5	5.2	5.2	76.0	76.0
INTAKE MAN. TEMP., F	143	143	155	155	113	113
CONCENTRATIONS, DRY BASIS						
CO, %	.1675	.0075	.1755	.0075	4.0936	4.1773
CO2, %	12.82	13.37	12.60	12.90	12.38	12.43
O2, %	2.25	1.94	2.30	2.07	.23	.13
HC, PPMC	1534	32	1143	32	2032	1501
NOX, PPM	336	372	283	277	1181	947
AIR/FUEL RATIO	16.24	16.23	16.35	16.38	13.10	13.06
EMISSION RATES, G/HR						
CO	.4	.0	41.0	1.8	5056.0	5105.1
HC	.2	.0	13.4	1.1	129.6	92.1
NOX+	.1	.1	8.8	8.3	194.1	154.3
OIL TEMPERATURE, F	206	206	204	204	208	208
OIL PRESSURE, PSI	30	30	30	30	32	32
COOLANT TEMPERATURE, F	191	191	190	190	191	191
EXHAUST PRESSURE, IN. H2O	1.0	.0	.0	.0	32.0	6.0
EXHAUST TEMPERATURE, F	845	820	824	727	1239	1165

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	22.01	22.02	23.01	23.02	24.01	24.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/25/78	1/25/78	1/25/78	1/25/78	1/25/78	1/25/78
BAROMETER, MMHG	740.3	740.3	740.3	740.3	740.3	740.3
HUMIDITY, GRAINS/LB	25	25	25	25	25	25
TEMPERATURE, F	78	78	79	79	81	81
ENGINE SPEED, RPM	2000	2000	2000	2000	2000	2000
TORQUE, FT-LB	113.0	113.0	94.5	94.5	75.6	75.6
POWER, BHP*	41.9	41.9	35.1	35.1	28.1	28.1
FUEL RATE, LB/HR	18.8	18.7	15.8	15.9	12.6	12.7
IGNITION TIMING, DEG BTDC	20.0	20.0	22.0	22.0	31.0	31.0
MANIFOLD VACUUM, IN HG	2.0	2.0	3.0	3.0	5.5	5.5
THROTTLE ANGLE, DEG	47.0	47.0	36.0	36.0	28.0	28.0
INTAKE MAN. TEMP., F	150	150	168	168	188	188
CONCENTRATIONS, DRY BASIS						
CO, %	1.0937	.9557	.1200	.0093	.0657	.0076
CO2, %	14.42	14.69	14.67	15.15	13.33	13.62
O2, %	.44	.19	1.04	.66	2.14	1.98
HC, PPMC	1463	291	996	56	847	51
NOX, PPM	2415	1965	2276	2214	1867	1921
AIR/FUEL RATIO	14.56	14.56	15.42	15.30	16.32	16.30
EMISSION RATES, G/HR						
CO	1186.3	1027.3	115.4	8.8	55.7	6.4
HC	79.7	15.7	48.1	2.7	36.0	2.2
NOX+	349.3	281.7	291.7	279.5	210.8	216.4
OIL TEMPERATURE, F	232	232	238	238	247	247
OIL PRESSURE, PSI	31	31	30	30	30	30
COOLANT TEMPERATURE, F	193	193	193	193	190	190
EXHAUST PRESSURE, IN. H2O	21.0	2.0	20.0	.0	14.0	.0
EXHAUST TEMPERATURE, F	1279	1209	1265	1225	1174	1143

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	25.01	25.02	26.01	26.02	27.01	27.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/25/78	1/25/78	1/25/78	1/25/78	1/27/78	1/27/78
BAROMETER, MMHG	740.3	740.3	740.3	740.3	755.4	755.4
HUMIDITY, GRAINS/LB	25	25	25	25	18	18
TEMPERATURE, F	83	83	85	85	65	65
ENGINE SPEED, RPM	2000	2000	2000	2000	2000	2000
TORQUE, FT-LB	50.4	50.4	31.5	31.5	12.6	12.6
POWER, BHP*	18.7	18.7	11.7	11.7	4.6	4.6
FUEL RATE, LB/HR	9.6	9.6	7.8	7.8	5.8	5.8
IGNITION TIMING, DEG BTDC	40.0	40.0	40.0	40.0	40.0	40.0
MANIFOLD VACUUM, IN HG	9.5	9.5	12.5	12.5	17.0	17.0
THROTTLE ANGLE, DEG	19.5	19.5	14.5	14.5	10.0	10.0
INTAKE MAN. TEMP., F	193	193	194	194	162	162
CONCENTRATIONS, DRY BASIS						
CO, %	.0801	.0075	.1620	.0078	.2158	.0074
CO2, %	13.16	13.37	13.56	13.94	12.66	13.21
O2, %	2.31	2.14	2.19	1.81	2.46	1.93
HC, PPMC	1346	68	1871	103	2469	133
NOX, PPM	964	964	363	404	122	141
AIR/FUEL RATIO	16.36	16.40	16.09	16.08	16.27	16.23
EMISSION RATES, G/HR						
CO	52.0	4.9	82.0	3.9	85.4	2.9
HC	43.9	2.2	47.6	2.6	49.1	2.6
NOX+	83.5	83.5	24.5	27.2	6.3	7.2
OIL TEMPERATURE, F	231	231	226	226	221	221
OIL PRESSURE, PSI	30	30	30	30	32	32
COOLANT TEMPERATURE, F	188	188	189	189	190	190
EXHAUST PRESSURE, IN. H2O	4.0	.0	2.0	.0	1.0	.0
EXHAUST TEMPERATURE, F	1086	1044	1052	994	1034	977

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	28.01	28.02	29.01	29.02	30.01	30.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/27/78	1/27/78	1/25/78	1/25/78	1/25/78	1/25/78
BAROMETER, MMHG	755.4	755.4	740.3	740.3	740.3	740.3
HUMIDITY, GRAINS/LB	18	18	25	25	25	25
TEMPERATURE, F	64	64	73	73	77	77
ENGINE SPEED, RPM	2000	2000	2500	2500	2500	2500
TORQUE, FT-LB	7.0	7.0	125.0	125.0	112.5	112.5
POWER, BHP*	2.6	2.6	58.0	58.0	52.2	52.2
FUEL RATE, LB/HR	4.2	4.4	28.0	27.9	22.9	22.9
IGNITION TIMING, DEG BTDC	40.0	40.0	23.0	23.0	23.0	23.0
MANIFOLD VACUUM, IN HG	21.0	21.0	.6	.6	1.5	1.5
THROTTLE ANGLE, DEG	7.0	7.0	76.0	76.0	57.0	57.0
INTAKE MAN. TEMP., F	153	153	120	120	152	152
CONCENTRATIONS, DRY BASIS						
CO, %	.2214	.0075	3.7075	3.7520	.3432	.0406
CO2, %	12.93	13.10	12.68	12.87	14.55	15.26
O2, %	1.89	1.65	.28	.12	1.09	.74
HC, PPMC	1062	87	1892	830	882	54
NOX, PPM	394	409	1558	1155	2905	2695
AIR/FUEL RATIO	16.00	16.05	13.32	13.30	15.38	15.35
EMISSION RATES, G/HR						
CO	63.7	2.3	5652.4	5651.5	474.2	54.9
HC	15.3	1.3	144.9	62.8	61.2	3.6
NOX+	14.7	16.1	316.6	231.9	535.1	485.7
OIL TEMPERATURE, F	216	216	223	223	246	246
OIL PRESSURE, PSI	32	32	35	35	33	33
COOLANT TEMPERATURE, F	190	190	188	188	188	188
EXHAUST PRESSURE, IN. H2O	1.0	.0	50.0	11.0	42.0	8.0
EXHAUST TEMPERATURE, F	936	922	1331	1274	1379	1355

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	31.01	31.02	32.01	32.02	33.01	33.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/25/78	1/25/78	1/25/78	1/25/78	1/25/78	1/25/78
BAROMETER, MMHG	740.3	740.3	740.3	740.3	745.0	745.0
HUMIDITY, GRAINS/LB	25	25	25	25	25	25
TEMPERATURE, F	82	82	82	82	76	76
ENGINE SPEED, RPM	2500	2500	2500	2500	2500	2500
TORQUE, FT-LB	93.8	93.8	75.0	75.0	50.0	50.0
POWER, BHP*	43.5	43.5	34.8	34.8	23.1	23.1
FUEL RATE, LB/HR	19.4	19.4	16.0	16.1	12.4	12.4
IGNITION TIMING, DEG BTDC	26.0	26.0	35.0	35.0	42.0	42.0
MANIFOLD VACUUM, IN HG	3.5	3.5	5.5	5.5	10.5	10.5
THROTTLE ANGLE, DEG	39.5	39.5	32.5	32.5	23.0	23.0
INTAKE MAN. TEMP., F	168	168	180	180	137	137
CONCENTRATIONS, DRY BASIS						
CO, %	.1941	.0152	.0744	.0076	.0928	.0076
CO2, %	14.28	14.34	12.91	13.04	13.73	13.97
O2, %	.74	.41	2.04	1.92	2.31	2.00
HC, PPMC	965	49	733	48	1305	60
NOX, PPM	2435	2243	2508	2463	1341	1455
AIR/FUEL RATIO	15.21	15.16	16.32	16.34	16.30	16.26
EMISSION RATES, G/HR						
CO	233.2	18.6	82.1	8.4	74.3	6.1
HC	58.2	3.0	40.6	2.7	52.5	2.4
NOX+	389.9	365.3	369.0	365.1	143.1	154.8
OIL TEMPERATURE, F	250	250	244	244	205	205
OIL PRESSURE, PSI	32	32	32	32	32	32
COOLANT TEMPERATURE, F	193	193	191	191	190	190
EXHAUST PRESSURE, IN. H2O	30.0	3.0	20.0	1.0	9.0	1.0
EXHAUST TEMPERATURE, F	1333	1316	1240	1199	1144	1012

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	34.01	34.02	35.01	35.02	36.01	36.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/25/78	1/25/78	1/25/78	1/25/78	1/25/78	1/25/78
BAROMETER, MMHG	745.0	745.0	745.0	745.0	745.0	745.0
HUMIDITY, GRAINS/LB	25	25	25	25	25	25
TEMPERATURE, F	80	80	84	84	85	85
ENGINE SPEED, RPM	2500	2500	2500	2500	2500	2500
TORQUE, FT-LB	31.3	31.3	12.5	12.5	8.2	8.2
POWER, BHP*	14.4	14.4	5.8	5.8	3.8	3.8
FUEL RATE, LB/HR	9.7	9.6	6.9	7.0	6.6	6.5
IGNITION TIMING, DEG BTDC	42.0	42.0	32.0	32.0	32.0	32.0
MANIFOLD VACUUM, IN HG	13.0	13.0	16.5	16.5	17.2	17.2
THROTTLE ANGLE, DEG	17.5	17.5	13.0	13.0	12.0	12.0
INTAKE MAN. TEMP., F	173	173	185	185	191	191
CONCENTRATIONS, DRY BASIS						
CO, %	.1409	.0076	.2278	.0076	.2622	.0076
CO2, %	13.86	14.35	13.71	14.02	13.57	14.11
O2, %	2.08	1.77	2.17	1.65	2.18	1.60
HC, PPMC	1391	67	1977	95	2409	94
NOX, PPM	531	582	177	189	133	150
AIR/FUEL RATIO	16.06	16.03	16.01	15.96	15.96	15.92
EMISSION RATES, G/HR						
CO	87.5	4.6	101.0	3.4	111.0	3.1
HC	43.4	2.0	44.0	2.2	51.2	2.0
NOX+	43.9	46.8	10.5	11.4	7.5	8.3
OIL TEMPERATURE, F	227	227	226	226	223	223
OIL PRESSURE, PSI	32	32	32	32	32	32
COOLANT TEMPERATURE, F	190	190	190	190	190	190
EXHAUST PRESSURE, IN. H2O	4.0	.0	3.0	.0	2.0	.0
EXHAUST TEMPERATURE, F	1134	1072	1093	1034	1083	1013

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	37.01	37.02	38.01	38.02	39.01	39.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/25/78	1/25/78	1/25/78	1/25/78	1/25/78	1/25/78
BAROMETER, MMHG	745.0	745.0	745.0	745.0	745.0	745.0
HUMIDITY, GRAINS/LB	25	25	25	25	25	25
TEMPERATURE, F	60	60	62	62	65	65
ENGINE SPEED, RPM	2800	2800	2800	2800	2800	2800
TORQUE, FT-LB	130.6	130.6	117.5	117.5	97.9	97.9
POWER, BHP*	67.4	67.4	60.7	60.7	50.6	50.6
FUEL RATE, LB/HR	32.2	32.2	26.5	26.5	22.8	22.9
IGNITION TIMING, DEG BTDC	25.0	25.0	25.0	25.0	25.0	25.0
MANIFOLD VACUUM, IN HG	1.0	1.0	2.0	2.0	3.5	3.5
THROTTLE ANGLE, DEG	76.0	76.0	61.0	61.0	46.0	46.0
INTAKE MAN. TEMP., F	92	92	126	126	134	134
CONCENTRATIONS, DRY BASIS						
CO, %	3.5588	3.8939	.4159	.0233	.1134	.0078
CO2, %	12.28	12.11	14.05	14.68	14.48	14.52
O2, %	.25	.10	.87	.63	1.09	1.06
HC, PPMC	1929	968	982	53	712	56
NOX, PPM	1794	1240	2930	2852	2468	2471
AIR/FUEL RATIO	13.32	13.15	15.21	15.31	15.50	15.60
EMISSION RATES, G/HR						
CO	6448.7	7041.6	683.2	37.9	159.4	11.1
HC	175.5	87.9	81.0	4.4	50.3	4.0
NOX+	432.9	298.5	640.9	617.6	462.0	467.7
OIL TEMPERATURE, F	222	222	251	251	249	249
OIL PRESSURE, PSI	35	35	35	33	35	35
COOLANT TEMPERATURE, F	188	188	194	194	188	188
EXHAUST PRESSURE, IN. H2O	63.0	18.0	60.0	13.0	36.0	8.0
EXHAUST TEMPERATURE, F	1355	1277	1418	1397	1375	1334

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	40.01	40.02	41.01	41.02	42.01	42.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/25/78	1/25/78	1/25/78	1/25/78	1/25/78	1/25/78
BAROMETER, MMHG	745.0	745.0	745.0	745.0	745.0	745.0
HUMIDITY, GRAINS/LB	25	25	25	25	25	25
TEMPERATURE, F	65	65	64	64	63	63
ENGINE SPEED, RPM	2800	2800	2800	2800	2800	2800
TORQUE, FT-LB	78.4	78.4	52.2	52.2	32.7	32.7
POWER, BHP*	40.5	40.5	27.0	27.0	16.9	16.9
FUEL RATE, LB/HR	18.5	18.4	14.1	14.0	11.2	11.2
IGNITION TIMING, DEG BTDC	40.0	40.0	35.0	35.0	45.0	45.0
MANIFOLD VACUUM, IN HG	6.0	6.0	10.5	10.5	13.0	13.0
THROTTLE ANGLE, DEG	34.0	34.0	25.0	25.0	19.0	19.0
INTAKE MAN. TEMP., F	145	145	143	143	139	139
CONCENTRATIONS, DRY BASIS						
CO, %	.0757	.0077	.0932	.0076	.1306	.0075
CO2, %	14.04	14.29	13.86	13.91	13.69	13.90
O2, %	2.03	1.86	2.13	1.90	2.35	2.11
HC, PPMC	658	55	1042	61	1090	67
NOX, PPM	2395	2415	1480	1522	596	569
AIR/FUEL RATIO	16.20	16.17	16.20	16.19	16.31	16.31
EMISSION RATES, G/HR						
CO	89.4	9.0	84.4	6.9	94.9	5.5
HC	39.0	3.2	47.4	2.8	39.8	2.4
NOX+	376.5	374.1	178.6	184.7	57.6	55.1
OIL TEMPERATURE, F	236	236	222	227	220	220
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	190	190	191	191	191	191
EXHAUST PRESSURE, IN. H2O	30.0	4.0	15.0	.0	8.0	.0
EXHAUST TEMPERATURE, F	1260	1220	1184	1126	1150	1049

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	43.01	43.02	44.01	44.02	45.01	45.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/25/78	1/25/78	1/25/78	1/25/78	1/26/78	1/26/78
BAROMETER, MMHG	745.0	745.0	745.0	745.0	749.4	749.4
HUMIDITY, GRAINS/LB	25	25	25	25	21	21
TEMPERATURE, F	63	63	63	63	74	74
ENGINE SPEED, RPM	2800	2800	2800	2800	3200	3200
TORQUE, FT-LB	13.1	13.1	8.3	8.3	124.8	124.8
POWER, BHP*	6.8	6.8	4.3	4.3	74.1	74.1
FUEL RATE, LB/HR	8.4	8.3	7.8	7.8	36.3	36.2
IGNITION TIMING, DEG BTDC	45.0	45.0	45.0	45.0	27.0	27.0
MANIFOLD VACUUM, IN HG	16.9	16.9	17.9	17.9	1.0	1.0
THROTTLE ANGLE, DEG	15.0	15.0	13.8	13.8	76.0	76.0
INTAKE MAN. TEMP., F	141	141	145	145	117	117
CONCENTRATIONS, DRY BASIS						
CO, %	.2157	.0075	.2414	.0074	3.8405	3.8299
CO2, %	13.36	13.86	13.18	13.43	12.47	12.63
O2, %	2.38	2.05	2.39	2.09	.17	.06
HC, PPMC	1296	76	2064	81	1763	875
NOX, PPM	174	207	135	155	1576	1219
AIR/FUEL RATIO	16.28	16.26	16.20	16.33	13.20	13.21
EMISSION RATES, G/HR						
CO	119.4	4.1	124.6	3.9	7637.5	7575.1
HC	36.1	2.1	53.5	2.1	176.1	86.9
NOX+	12.8	15.0	9.3	10.8	411.0	316.2
OIL TEMPERATURE, F	213	213	210	210	243	243
OIL PRESSURE, PSI	35	35	39	39	35	35
COOLANT TEMPERATURE, F	191	191	190	190	192	192
EXHAUST PRESSURE, IN. H2O	4.0	.0	2.0	.0	79.0	39.0
EXHAUST TEMPERATURE, F	1127	1020	1116	1000	1383	1317

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	46.01	46.02	47.01	47.02	48.01	48.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78
BAROMETER, MMHG	749.4	749.4	749.4	749.4	749.4	749.4
HUMIDITY, GRAINS/LB	21	21	21	21	21	21
TEMPERATURE, F	75	75	73	73	72	72
ENGINE SPEED, RPM	3200	3200	3200	3200	3200	3200
TORQUE, FT-LB	113.3	113.3	93.6	93.6	74.9	74.9
POWER, BHP*	67.2	67.2	55.5	55.5	44.5	44.5
FUEL RATE, LB/HR	29.6	29.5	25.7	25.7	20.9	20.9
IGNITION TIMING, DEG BTDC	27.0	27.0	30.0	30.0	44.0	44.0
MANIFOLD VACUUM, IN HG	2.0	2.0	4.0	4.0	6.4	6.4
THROTTLE ANGLE, DEG	63.0	63.0	48.0	48.0	35.5	35.5
INTAKE MAN. TEMP., F	130	130	137	137	147	147
CONCENTRATIONS, DRY BASIS						
CO, %	.3607	.0223	.1135	.0079	.0745	.0078
CO2, %	14.47	14.81	14.58	14.89	13.93	14.01
O2, %	.97	.79	1.03	.77	1.63	1.48
HC, PPMC	790	50	725	49	707	52
NOX, PPM	2742	2717	2430	2456	2755	2780
AIR/FUEL RATIO	15.31	15.41	15.45	15.39	15.93	15.94
EMISSION RATES, G/HR						
CO	646.7	40.0	178.7	12.2	99.8	10.4
HC	71.1	4.5	57.3	3.8	47.6	3.5
NOX+	644.7	640.6	501.7	501.3	484.1	490.3
OIL TEMPERATURE, F	251	251	248	248	244	244
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	191	191	194	194	191	191
EXHAUST PRESSURE, IN. H2O	73.0	30.0	54.0	18.0	37.0	9.0
EXHAUST TEMPERATURE, F	1445	1407	1397	1341	1291	1251

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	49.01	49.02	50.01	50.02	51.01	51.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78
BAROMETER, MMHG	749.4	749.4	749.4	749.4	749.4	749.4
HUMIDITY, GRAINS/LB	21	21	21	21	21	21
TEMPERATURE, F	71	71	71	71	70	70
ENGINE SPEED, RPM	3200	3200	3200	3200	3200	3200
TORQUE, FT-LB	49.9	49.9	31.2	31.2	12.5	12.5
POWER, BHP*	29.6	29.6	18.5	18.5	7.4	7.4
FUEL RATE, LB/HR	16.1	16.1	12.6	12.6	9.8	9.8
IGNITION TIMING, DEG BTDC	47.0	47.0	47.0	47.0	47.0	47.0
MANIFOLD VACUUM, IN HG	11.5	11.5	14.0	14.0	16.8	16.8
THROTTLE ANGLE, DEG	26.0	26.0	21.0	21.0	17.0	17.0
INTAKE MAN. TEMP., F	145	145	142	142	141	141
CONCENTRATIONS, DRY BASIS						
CO, %	.0988	.0076	.1409	.0075	.1907	.0075
CO2, %	13.89	14.05	13.00	12.83	12.64	12.87
O2, %	1.32	1.13	2.18	2.00	2.21	2.03
HC, PPMC	1102	59	787	52	713	54
NOX, PPM	1924	1920	670	698	245	258
AIR/FUEL RATIO	15.64	15.66	16.29	16.36	16.32	16.36
EMISSION RATES, G/HR						
CO	102.0	7.9	121.4	6.6	130.4	5.1
HC	57.1	3.1	34.1	2.3	24.5	1.9
NOX+	260.5	259.8	75.7	80.7	22.0	23.1
OIL TEMPERATURE, F	238	238	231	231	224	224
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	192	192	191	191	191	191
EXHAUST PRESSURE, IN. H2O	21.0	2.0	12.0	.0	7.0	.0
EXHAUST TEMPERATURE, F	1246	1163	1191	1113	1175	1062

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	52.01	52.02	53.01	53.02	54.01	54.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78
BAROMETER, MMHG	749.4	749.4	749.4	749.4	749.4	749.4
HUMIDITY, GRAINS/LB	21	21	21	21	21	21
TEMPERATURE, F	69	69	70	70	76	76
ENGINE SPEED, RPM	3200	3200	3800	3800	3800	3800
TORQUE, FT-LB	8.2	8.2	122.5	122.5	110.3	110.3
POWER, BHP*	4.9	4.9	86.3	86.3	77.7	77.7
FUEL RATE, LB/HR	9.0	9.0	42.7	42.6	36.3	36.4
IGNITION TIMING, DEG BTDC	47.0	47.0	31.0	31.0	31.0	31.0
MANIFOLD VACUUM, IN HG	17.5	17.5	1.5	1.5	2.0	2.0
THROTTLE ANGLE, DEG	15.0	15.0	76.0	76.0	66.0	66.0
INTAKE MAN. TEMP., F	143	143	89	89	128	128
CONCENTRATIONS, DRY BASIS						
CO, %	.2164	.0075	3.6651	3.6929	.7511	.1443
CO2, %	12.59	13.18	11.98	12.05	13.56	14.07
O2, %	2.30	2.02	.17	.05	.75	.39
HC, PPMC	967	56	1772	740	510	31
NOX, PPM	178	204	1791	1355	2748	2087
AIR/FUEL RATIO	16.35	16.31	13.21	13.21	15.02	15.08
EMISSION RATES, G/HR						
CO	136.2	4.6	8940.2	8983.9	1714.0	334.1
HC	30.6	1.7	217.1	90.4	58.5	3.6
NOX+	14.7	16.5	572.9	432.3	822.3	633.6
OIL TEMPERATURE, F	220	220	211	211	259	259
OIL PRESSURE, PSI	35	35	37	37	35	35
COOLANT TEMPERATURE, F	190	190	191	191	191	191
EXHAUST PRESSURE, IN. H2O	4.0	.0	102.0	51.0	100.0	50.0
EXHAUST TEMPERATURE, F	1165	1039	1437	1355	1519	1526

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	55.01	55.02	56.01	56.02	57.01	57.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78
BAROMETER, MMHG	749.4	749.4	749.4	749.4	749.4	749.4
HUMIDITY, GRAINS/LB	21	21	21	21	21	21
TEMPERATURE, F	76	76	73	73	71	71
ENGINE SPEED, RPM	3800	3800	3800	3800	3800	3800
TORQUE, FT-LB	91.9	91.9	73.5	73.5	49.0	49.0
POWER, BHP*	64.8	64.8	51.8	51.8	34.5	34.5
FUEL RATE, LB/HR	31.3	31.3	25.6	25.5	19.3	19.3
IGNITION TIMING, DEG BTDC	31.0	31.0	45.0	45.0	51.0	51.0
MANIFOLD VACUUM, IN HG	3.2	3.2	6.9	6.9	11.0	11.0
THROTTLE ANGLE, DEG	58.0	58.0	41.0	41.0	30.0	30.0
INTAKE MAN. TEMP., F	145	145	152	152	150	150
CONCENTRATIONS, DRY BASIS						
CO, %	.1178	.0085	.0841	.0079	.1051	.0078
CO2, %	13.16	13.31	13.17	13.71	13.57	13.89
O2, %	1.40	1.32	1.44	1.37	1.44	1.29
HC, PPMC	310	32	578	37	778	44
NOX, PPM	2427	2470	2864	2841	2491	2414
AIR/FUEL RATIO	15.84	15.87	15.87	15.88	15.79	15.80
EMISSION RATES, G/HR						
CO	250.6	18.1	146.1	13.2	133.0	9.7
HC	33.1	3.4	50.4	3.1	49.4	2.8
NOX+	676.9	688.4	652.2	626.2	413.5	396.5
OIL TEMPERATURE, F	263	263	258	258	253	253
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	193	193	193	193	192	192
EXHAUST PRESSURE, IN. H2O	80.0	37.0	51.0	22.0	28.0	10.0
EXHAUST TEMPERATURE, F	1486	1422	1356	1306	1301	1225

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	58.01	58.02	59.01	59.02	60.01	60.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78
BAROMETER, MMHG	749.4	749.4	749.4	749.4	749.4	749.4
HUMIDITY, GRAINS/LB	21	21	21	21	21	21
TEMPERATURE, F	71	71	70	70	70	70
ENGINE SPEED, RPM	3800	3800	3800	3800	3800	3800
TORQUE, FT-LB	30.6	30.6	12.3	12.3	8.7	8.7
POWER, BHP*	21.6	21.6	8.7	8.7	6.1	6.1
FUEL RATE, LB/HR	15.1	15.1	13.1	10.9	10.7	10.6
IGNITION TIMING, DEG BTDC	51.0	51.0	51.0	51.0	51.0	51.0
MANIFOLD VACUUM, IN HG	14.5	14.5	17.6	17.6	17.6	17.6
THROTTLE ANGLE, DEG	24.0	24.0	18.0	18.0	17.5	17.5
INTAKE MAN. TEMP., F	149	149	148	148	150	150
CONCENTRATIONS, DRY BASIS						
CO, %	.1588	.0077	.2025	.0076	.2102	.0076
CO2, %	13.82	14.14	13.72	13.86	13.50	13.70
O2, %	1.22	.99	1.24	1.03	1.31	1.11
HC, PPMC	880	48	522	40	601	41
NOX, PPM	1246	1188	339	358	327	313
AIR/FUEL RATIO	15.54	15.53	15.54	15.55	15.59	15.61
EMISSION RATES, G/HR						
CO	154.1	7.4	171.2	5.4	147.6	5.3
HC	42.9	2.3	22.2	1.4	21.2	1.5
NOX+	158.5	150.2	37.6	33.2	30.1	28.7
OIL TEMPERATURE, F	244	244	239	239	235	235
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	191	191	191	191	191	191
EXHAUST PRESSURE, IN. H2O	14.0	3.0	8.0	.0	9.0	.0
EXHAUST TEMPERATURE, F	1246	1171	1216	1116	1205	1086

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	61.01	61.02	62.01	62.02	63.01	63.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78
BAROMETER, MMHG	749.4	749.4	749.4	749.4	749.4	749.4
HUMIDITY, GRAINS/LB	37	37	37	37	37	37
TEMPERATURE, F	67	67	64	64	67	67
ENGINE SPEED, RPM	4400	4400	4400	4400	4400	4400
TORQUE, FT-LB	109.7	109.7	98.7	98.7	82.3	82.3
POWER, BHP*	90.0	90.0	81.0	81.0	67.5	67.5
FUEL RATE, LB/HR	47.4	47.5	38.7	38.8	34.2	34.2
IGNITION TIMING, DEG BTDC	33.5	33.5	33.5	33.5	33.5	33.5
MANIFOLD VACUUM, IN HG	1.5	1.5	2.5	2.5	3.5	3.5
THROTTLE ANGLE, DEG	76.0	76.0	65.0	65.0	58.0	58.0
INTAKE MAN. TEMP., F	93	93	105	105	139	139
CONCENTRATIONS, DRY BASIS						
CO, %	4.0852	3.1884	.4867	.0865	.1399	.0178
CO2, %	12.23	12.79	13.64	14.28	13.71	14.02
O2, %	.12	.06	.83	.42	.98	.88
HC, PPMC	1698	506	394	24	260	19
NOX, PPM	1560	1644	2614	2094	2371	2322
AIR/FUEL RATIO	13.07	13.50	15.21	15.13	15.49	15.50
EMISSION RATES, G/HR						
CO	10617.3	8537.9	1202.0	211.0	311.3	39.1
HC	221.6	68.1	48.9	2.9	29.1	2.1
NOX+	564.9	613.5	899.8	711.7	735.4	711.5
OIL TEMPERATURE, F	230	230	235	235	260	260
OIL PRESSURE, PSI	37	37	37	37	37	37
COOLANT TEMPERATURE, F	193	193	194	194	194	194
EXHAUST PRESSURE, IN. H2O	110.0	60.0	105.0	55.0	92.0	45.0
EXHAUST TEMPERATURE, F	1485	1466	1555	1546	1537	1480

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	64.01	64.02	65.01	65.02	66.01	66.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78
BAROMETER, MMHG	749.4	749.4	749.4	749.4	749.4	749.4
HUMIDITY, GRAINS/LB	37	37	37	37	37	37
TEMPERATURE, F	67	67	66	66	65	65
ENGINE SPEED, RPM	4400	4400	4400	4400	4400	4400
TORQUE, FT-LB	65.8	65.8	43.9	43.9	27.4	27.4
POWER, BHP*	54.0	54.0	36.0	36.0	22.5	22.5
FUEL RATE, LB/HR	27.5	27.6	21.3	21.3	17.4	17.4
IGNITION TIMING, DEG BTDC	39.0	39.0	52.0	52.0	52.0	52.0
MANIFOLD VACUUM, IN HG	6.6	6.6	11.2	11.2	14.5	14.5
THROTTLE ANGLE, DEG	44.0	44.0	32.0	32.0	26.0	26.0
INTAKE MAN. TEMP., F	156	156	153	153	153	153
CONCENTRATIONS, DRY BASIS						
CO, %	.0895	.0079	.1114	.0078	.1442	.0077
CO2, %	13.36	13.59	13.73	13.93	13.92	14.21
O2, %	1.64	1.61	1.35	1.22	1.05	.88
HC, PPMC	366	26	416	26	509	24
NOX, PPM	2877	2886	2326	2328	1280	1267
AIR/FUEL RATIO	16.03	16.07	15.75	15.75	15.47	15.46
EMISSION RATES, G/HR						
CO	165.0	14.5	154.6	10.8	160.2	8.5
HC	33.9	2.4	29.0	1.8	28.4	1.3
NOX+	739.5	737.0	449.9	447.2	198.1	194.6
OIL TEMPERATURE, F	262	262	256	256	250	250
OIL PRESSURE, PSI	37	37	37	37	37	37
COOLANT TEMPERATURE, F	193	193	193	193	192	192
EXHAUST PRESSURE, IN. H2O	67.0	28.0	42.0	12.0	26.0	5.0
EXHAUST TEMPERATURE, F	1409	1352	1354	1288	1315	1227

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	67.01	67.02	68.01	68.02	69.01	69.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78
BAROMETER, MMHG	749.4	749.4	749.4	749.4	749.4	749.4
HUMIDITY, GRAINS/LB	37	37	37	37	37	37
TEMPERATURE, F	65	65	65	65	60	60
ENGINE SPEED, RPM	4400	4400	4400	4400	650	650
TORQUE, FT-LB	12.9	12.9	11.5	11.5	2.6	2.6
POWER, BHP*	10.6	10.6	9.4	9.4	.3	.3
FUEL RATE, LB/HR	13.8	13.8	13.9	13.9	1.6	1.6
IGNITION TIMING, DEG BTDC	52.0	52.0	52.0	52.0	14.0	14.0
MANIFOLD VACUUM, IN HG	16.6	16.6	17.0	17.0	19.0	19.0
THROTTLE ANGLE, DEG	22.0	22.0	21.5	21.5	.0	.0
INTAKE MAN. TEMP., F	153	153	155	155	116	116
CONCENTRATIONS, DRY BASIS						
CO, %	.1890	.0075	.1809	.0075	.1226	.0088
CO2, %	14.28	14.54	14.38	14.57	13.16	14.14
O2, %	.88	.62	.90	.72	1.84	.59
HC, PPMC	345	30	255	22	3952	310
NOX, PPM	483	519	544	528	47	35
AIR/FUEL RATIO	15.30	15.24	15.33	15.31	15.65	15.19
EMISSION RATES, G/HR						
CO	162.3	6.5	155.2	6.5	12.9	.9
HC	14.9	1.3	11.0	.9	20.8	1.6
NOX+	57.8	62.1	65.0	63.1	.7	.5
OIL TEMPERATURE, F	244	244	243	243	158	158
OIL PRESSURE, PSI	37	37	37	37	20	20
COOLANT TEMPERATURE, F	191	191	191	191	190	190
EXHAUST PRESSURE, IN. H2O	18.0	1.0	16.0	.0	1.0	.0
EXHAUST TEMPERATURE, F	1287	1185	1284	1174	480	540

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID

FUEL CODE: 7718

TEST NUMBER	70.01	70.02	71.01	71.02	72.01	72.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78	1/26/78
BAROMETER, MMHG	749.4	749.4	749.4	749.4	749.4	749.4
HUMIDITY, GRAINS/LB	37	37	37	37	37	37
TEMPERATURE, F	61	61	60	60	61	61
ENGINE SPEED, RPM	650	650	650	650	550	550
TORQUE, FT-LB	10.0	10.0	15.0	15.0	13.9	13.9
POWER, BHP*	1.2	1.2	1.8	1.8	1.4	1.4
FUEL RATE, LB/HR	1.9	1.9	2.1	2.0	1.3	1.6
IGNITION TIMING, DEG BTDC	14.0	14.0	14.0	14.0	14.0	14.0
MANIFOLD VACUUM, IN HG	18.0	18.0	17.5	17.5	17.5	17.5
THROTTLE ANGLE, DEG	1.0	1.0	1.2	1.2	.0	.0
INTAKE MAN. TEMP., F	112	112	108	108	108	108
CONCENTRATIONS, DRY BASIS						
CO, %	.6474	.5291	.7664	.8070	1.2914	1.1396
CO2, %	13.73	14.28	14.07	14.28	14.02	14.35
O2, %	.49	.27	.45	.38	.33	.30
HC, PPMC	4314	4024	4059	4132	4662	4587
NOX, PPM	79	41	94	66	72	53
AIR/FUEL RATIO	14.42	14.37	14.38	14.32	14.04	14.10
EMISSION RATES, G/HR						
CO	76.3	58.9	95.6	96.3	92.5	106.4
HC	25.5	22.5	25.4	24.8	16.8	21.5
NOX+	1.3	.6	1.6	1.1	.7	.7
OIL TEMPERATURE, F	166	166	166	166	169	169
OIL PRESSURE, PSI	20	20	20	20	16	16
COOLANT TEMPERATURE, F	190	190	190	190	190	~~190~~
EXHAUST PRESSURE, IN. H2O	1.0	.0	1.0	.0	1.0	.0
EXHAUST TEMPERATURE, F	510	499	520	416	469	367

* CORRECTED SAE J816B

+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	73.01	73.02	74.01	74.02	75.01	75.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/27/78	1/27/78	1/27/78	1/27/78	1/27/78	1/27/78
BAROMETER, MMHG	755.4	755.4	755.4	755.4	755.4	755.4
HUMIDITY, GRAINS/LB	30	30	30	30	30	30
TEMPERATURE, F	67	67	67	67	67	67
ENGINE SPEED, RPM	1000	1000	1000	1000	1000	1000
TORQUE, FT-LB	80.7	80.7	64.6	64.6	26.9	26.9
POWER, BHP*	14.8	14.8	11.8	11.8	4.9	4.9
FUEL RATE, LB/HR	7.2	7.1	5.8	5.8	3.5	3.5
IGNITION TIMING, DEG BTDC	20.0	20.0	29.0	29.0	23.0	23.0
MANIFOLD VACUUM, IN HG	4.0	4.0	6.0	6.0	16.5	16.5
THROTTLE ANGLE, DEG	20.0	20.0	14.5	14.5	5.0	5.0
INTAKE MAN. TEMP., F	125	125	134	134	132	132
CONCENTRATIONS, DRY BASIS						
CO, %	.0819	.0076	.0840	.0075	.1251	.0076
CO2, %	12.26	12.84	12.39	12.66	13.07	13.52
O2, %	2.70	2.37	2.87	2.47	1.71	1.15
HC, PPMC	1863	103	2452	112	2237	125
NOX, PPM	1313	1319	713	735	582	557
AIR/FUEL RATIO	16.71	16.66	16.72	16.74	15.77	15.65
EMISSION RATES, G/HR						
CO	42.5	3.8	34.7	3.1	29.5	1.8
HC	48.5	2.6	50.9	2.3	26.5	1.5
NOX+	92.5	89.1	40.1	41.1	18.7	17.7
OIL TEMPERATURE, F	191	191	199	199	198	198
OIL PRESSURE, PSI	28	28	27	27	27	27
COOLANT TEMPERATURE, F	189	189	192	192	191	191
EXHAUST PRESSURE, IN. H2O	3.0	.0	.0	.0	1.0	.0
EXHAUST TEMPERATURE, F	919	755	877	857	794	777

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	76.01	76.02	77.01	77.02	80.01	80.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/27/78	1/27/78	1/27/78	1/27/78	1/27/78	1/27/78
BAROMETER, MMHG	755.4	755.4	755.4	755.4	755.4	755.4
HUMIDITY, GRAINS/LB	30	30	30	30	30	30
TEMPERATURE, F	65	65	65	65	67	67
ENGINE SPEED, RPM	1000	1000	1000	1000	1500	1500
TORQUE, FT-LB	10.8	10.8	4.2	4.2	28.1	28.1
POWER, BHP*	2.0	2.0	.8	.8	7.7	7.7
FUEL RATE, LB/HR	2.9	2.9	2.7	2.7	5.5	5.5
IGNITION TIMING, DEG BTDC	14.0	14.0	14.0	14.0	37.0	37.0
MANIFOLD VACUUM, IN HG	19.0	19.0	20.5	20.5	14.0	14.0
THROTTLE ANGLE, DEG	3.5	3.5	2.5	2.5	10.0	10.0
INTAKE MAN. TEMP., F	124	124	120	120	154	154
CONCENTRATIONS, DRY BASIS						
CO, %	.1582	.0075	.2882	.0076	.1132	.0074
CO2, %	13.82	14.11	13.84	14.30	12.90	13.32
O2, %	1.31	.84	.98	.52	2.11	1.75
HC, PPMC	1659	129	1674	157	2429	127
NOX, PPM	137	143	92	92	249	247
AIR/FUEL RATIO	15.48	15.39	15.18	15.15	16.05	16.09
EMISSION RATES, G/HR						
CO	29.2	1.4	48.5	1.3	42.2	2.7
HC	15.4	1.2	14.1	1.3	45.5	2.4
NOX+	3.4	3.7	2.1	2.1	12.6	12.4
OIL TEMPERATURE, F	192	192	190	190	214	214
OIL PRESSURE, PSI	27	27	27	27	30	30
COOLANT TEMPERATURE, F	191	191	188	188	192	192
EXHAUST PRESSURE, IN. H2O	1.0	.0	.0	.0	4.0	.0
EXHAUST TEMPERATURE, F	742	669	720	620	955	946

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	82.01	82.02	83.01	83.02	85.01	85.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/27/78	1/27/78	1/27/78	1/27/78	1/27/78	1/27/78
BAROMETER, MMHG	755.4	755.4	755.4	755.4	755.4	755.4
HUMIDITY, GRAINS/LB	30	30	18	18	18	18
TEMPERATURE, F	65	65	66	66	66	66
ENGINE SPEED, RPM	1500	1500	2000	2000	2000	2000
TORQUE, FT-LB	5.9	5.9	94.5	94.5	31.5	31.5
POWER, BHP*	1.6	1.6	34.5	34.5	11.5	11.5
FUEL RATE, LB/HR	3.6	3.6	15.8	15.7	7.9	7.9
IGNITION TIMING, DEG BTDC	28.0	28.0	22.0	22.0	40.0	40.0
MANIFOLD VACUUM, IN HG	21.0	21.0	3.5	3.5	12.5	12.5
THROTTLE ANGLE, DEG	5.0	5.0	35.0	35.0	14.5	14.5
INTAKE MAN. TEMP., F	131	131	147	147	159	159
CONCENTRATIONS, DRY BASIS						
CO, %	.1693	.0075	.0855	.0076	.1363	.0074
CO2, %	13.24	13.56	13.15	13.42	12.70	13.06
O2, %	2.07	1.69	1.41	1.16	2.46	2.08
HC, PPMC	1089	95	2155	60	2064	102
NOX, PPM	181	189	1899	1946	268	297
AIR/FUEL RATIO	16.12	16.03	15.63	15.72	16.37	16.37
EMISSION RATES, G/HR						
CO	40.3	1.8	90.5	8.1	74.9	4.0
HC	13.0	1.1	114.6	3.2	57.0	2.8
NOX+	5.9	6.1	260.7	266.6	19.1	21.0
OIL TEMPERATURE, F	202	202	222	222	228	228
OIL PRESSURE, PSI	30	30	30	30	32	32
COOLANT TEMPERATURE, F	190	190	189	189	189	189
EXHAUST PRESSURE, IN. H2O	1.0	.0	22.0	5.0	5.0	.0
EXHAUST TEMPERATURE, F	850	724	1247	1191	1077	1059

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	88.01	88.02	89.01	89.02	90.01	90.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/27/78	1/27/78	1/27/78	1/27/78	1/27/78	1/27/78
BAROMETER, MMHG	755.4	755.4	755.4	755.4	755.4	755.4
HUMIDITY, GRAINS/LB	18	18	18	18	18	18
TEMPERATURE, F	64	66	66	66	64	65
ENGINE SPEED, RPM	2500	2500	2500	2500	2500	2500
TORQUE, FT-LB	93.8	93.8	75.0	75.0	31.3	31.3
POWER, BHP*	42.8	42.8	34.2	34.2	14.3	14.3
FUEL RATE, LB/HR	19.6	19.6	15.7	15.8	9.6	9.6
IGNITION TIMING, DEG BTDC	26.0	26.0	35.0	35.0	42.0	42.0
MANIFOLD VACUUM, IN HG	3.8	6.5	6.5	6.5	14.0	14.0
THROTTLE ANGLE, DEG	39.0	39.0	30.0	30.0	16.5	16.5
INTAKE MAN. TEMP., F	134	152	152	152	150	150
CONCENTRATIONS, DRY BASIS						
CO, %	.0951	.0076	.0825	.0075	.1464	.0074
CO2, %	13.40	13.69	12.70	12.85	12.99	13.38
O2, %	1.12	.19	2.18	1.95	1.99	1.61
HC, PPMC	827	43	987	54	1659	79
NOX, PPM	2102	2213	2237	2264	440	458
AIR/FUEL RATIO	15.56	15.02	16.40	16.38	16.04	15.99
EMISSION RATES, G/HR						
CO	124.2	9.8	91.0	8.3	94.9	4.8
HC	54.2	2.8	54.7	3.0	54.0	2.6
NOX+	355.9	370.0	320.1	325.5	37.0	38.3
OIL TEMPERATURE, F	225	225	241	241	238	238
OIL PRESSURE, PSI	34	34	34	34	34	34
COOLANT TEMPERATURE, F	191	191	191	191	190	190
EXHAUST PRESSURE, IN. H2O	33.0	22.0	22.0	6.0	2.0	1.0
EXHAUST TEMPERATURE, F	1322	1230	1230	1200	1092	1104

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	91.01	91.02	92.01	92.02	93.01	93.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/27/78	1/27/78	1/27/78	1/27/78	1/27/78	1/27/78
BAROMETER, MMHG	755.4	755.4	755.4	755.4	755.4	755.4
HUMIDITY, GRAINS/LB	18	18	18	18	18	18
TEMPERATURE, F	64	64	64	64	64	64
ENGINE SPEED, RPM	2500	2500	2500	2500	2800	2800
TORQUE, FT-LB	12.5	12.5	8.2	8.2	97.9	97.9
POWER, BHP*	5.7	5.7	3.7	3.7	50.1	50.1
FUEL RATE, LB/HR	7.4	7.4	6.7	6.8	22.9	22.9
IGNITION TIMING, DEG BTDC	42.0	42.0	42.0	42.0	25.0	25.0
MANIFOLD VACUUM, IN HG	16.5	16.5	17.5	17.5	3.6	3.6
THROTTLE ANGLE, DEG	14.0	14.0	12.0	12.0	44.0	44.0
INTAKE MAN. TEMP., F	154	154	152	152	132	136
CONCENTRATIONS, DRY BASIS						
CO, %	.2262	.0073	.2809	.0073	.1480	.0077
CO2, %	12.63	12.87	12.27	13.05	13.69	13.91
O2, %	2.02	1.90	2.77	2.10	.94	.76
HC, PPMC	1979	85	2931	120	890	55
NOX, PPM	159	165	95	116	2318	2407
AIR/FUEL RATIO	16.00	16.25	16.45	16.37	15.39	15.42
EMISSION RATES, G/HR						
CO	116.5	3.8	132.7	3.5	220.0	11.4
HC	51.2	2.2	69.6	2.8	66.4	4.1
NOX+	10.6	11.2	5.8	7.1	446.8	463.0
OIL TEMPERATURE, F	228	228	224	224	233	233
OIL PRESSURE, PSI	34	34	34	34	35	35
COOLANT TEMPERATURE, F	190	190	190	190	193	193
EXHAUST PRESSURE, IN. H2O	3.0	.0	2.0	.0	44.0	17.0
EXHAUST TEMPERATURE, F	1101	1037	1092	1019	1377	1300

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	94.01	94.02	95.01	95.02	96.01	96.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/27/78	1/27/78	1/27/78	1/27/78	1/27/78	1/27/78
BAROMETER, MMHG	755.4	755.4	755.4	755.4	755.4	755.4
HUMIDITY, GRAINS/LB	18	18	18	18	18	18
TEMPERATURE, F	65	65	65	65	65	65
ENGINE SPEED, RPM	2800	2800	2800	2800	2800	2800
TORQUE, FT-LB	78.4	78.4	32.7	32.7	13.1	13.1
POWER, BHP*	40.1	40.1	16.7	16.7	6.7	6.7
FUEL RATE, LB/HR	18.4	18.3	11.0	11.0	8.0	8.0
IGNITION TIMING, DEG BTDC	40.0	40.0	45.0	45.0	45.0	45.0
MANIFOLD VACUUM, IN HG	6.5	6.5	13.5	13.5	17.0	17.0
THROTTLE ANGLE, DEG	33.0	33.0	19.0	19.0	14.0	14.0
INTAKE MAN. TEMP., F	149	149	149	149	152	152
CONCENTRATIONS, DRY BASIS						
CO, %	.1001	.0076	.1702	.0074	.2487	.0073
CO2, %	13.17	13.34	12.66	13.25	13.19	13.68
O2, %	1.63	1.40	2.42	2.25	2.42	2.06
HC, PPMC	820	57	790	48	1320	70
NOX, PPM	2650	2654	523	542	158	179
AIR/FUEL RATIO	15.97	15.93	16.50	16.49	16.30	16.28
EMISSION RATES, G/HR						
CO	124.3	9.4	131.1	5.5	133.1	3.9
HC	51.1	3.5	30.6	1.8	35.5	1.9
NOX+	426.7	426.1	52.2	52.7	11.0	12.3
OIL TEMPERATURE, F	248	248	244	244	235	235
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	192	192	190	190	189	189
EXHAUST PRESSURE, IN. H2O	29.0	9.0	9.0	2.0	4.0	.0
EXHAUST TEMPERATURE, F	1280	1250	1182	1110	1150	1072

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	97.01	97.02	98.01	98.02	99.01	99.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/27/78	1/27/78	1/30/78	1/30/78	1/30/78	1/30/78
BAROMETER, MMHG	755.4	755.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	18	18	29	29	29	29
TEMPERATURE, F	65	65	78	78	75	75
ENGINE SPEED, RPM	2800	2800	3200	3200	3200	3200
TORQUE, FT-LB	8.3	8.3	93.6	93.6	74.9	74.9
POWER, BHP*	4.2	4.2	55.3	55.3	44.2	44.2
FUEL RATE, LB/HR	7.4	7.4	25.3	25.3	20.8	20.8
IGNITION TIMING, DEG BTDC	45.0	45.0	30.0	30.0	44.0	44.0
MANIFOLD VACUUM, IN HG	17.5	17.5	3.0	3.0	6.4	6.4
THROTTLE ANGLE, DEG	13.0	13.0	47.0	47.0	36.0	36.0
INTAKE MAN. TEMP., F	157	157	161	161	165	165
CONCENTRATIONS, DRY BASIS						
CO, %	.2709	.0074	.2130	.0084	.0819	.0076
CO2, %	13.35	13.99	14.95	15.07	13.99	14.19
O2, %	2.47	2.06	.75	.68	1.59	1.50
HC, PPMC	1921	85	923	44	695	50
NOX, PPM	129	143	2370	2363	2677	2608
AIR/FUEL RATIO	16.24	16.25	15.19	15.32	15.90	15.93
EMISSION RATES, G/HR						
CO	131.8	3.5	319.6	12.7	109.0	10.1
HC	46.9	2.0	69.6	3.3	46.4	3.4
NOX+	8.1	8.9	481.4	484.2	481.8	467.1
OIL TEMPERATURE, F	229	229	250	250	241	241
OIL PRESSURE, PSI	34	34	35	35	35	35
COOLANT TEMPERATURE, F	190	190	190	190	191	191
EXHAUST PRESSURE, IN. H2O	2.0	.0	52.0	23.0	36.0	13.0
EXHAUST TEMPERATURE, F	1139	1048	1409	1372	1298	1237

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	100.01	100.02	101.01	101.02	102.01	102.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/30/78	1/30/78	1/30/78	1/30/78	1/30/78	1/30/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	29	29	29	29	29	29
TEMPERATURE, F	74	74	73	73	73	73
ENGINE SPEED, RPM	3200	3200	3200	3200	3200	3200
TORQUE, FT-LB	31.2	31.2	12.5	12.5	8.2	8.2
POWER, BHP*	18.4	18.4	7.4	7.4	4.8	4.8
FUEL RATE, LB/HR	12.4	12.4	9.5	9.4	8.8	8.8
IGNITION TIMING, DEG BTDC	47.0	47.0	47.0	47.0	47.0	47.0
MANIFOLD VACUUM, IN HG	14.0	14.0	17.0	17.0	17.6	17.6
THROTTLE ANGLE, DEG	21.0	21.0	16.0	16.0	15.0	15.0
INTAKE MAN. TEMP., F	158	158	158	158	158	158
CONCENTRATIONS, DRY BASIS						
CO, %	.1417	.0073	.2069	.0073	.2196	.0073
CO2, %	14.02	14.02	13.61	13.83	13.39	13.67
O2, %	1.82	1.61	1.86	1.65	1.92	1.70
HC, PPMC	817	49	872	52	968	52
NOX, PPM	628	662	207	233	166	188
AIR/FUEL RATIO	15.94	15.95	15.94	15.98	15.98	16.03
EMISSION RATES, G/HR						
CO	111.4	5.9	127.5	4.5	127.7	4.2
HC	32.2	1.9	27.0	1.6	28.3	1.5
NOX+	66.9	71.5	17.3	19.3	13.0	14.7
OIL TEMPERATURE, F	231	231	220	220	216	216
OIL PRESSURE, PSI	35	35	35	35	35	35
COOLANT TEMPERATURE, F	192	192	191	191	191	191
EXHAUST PRESSURE, IN. H2O	12.0	4.0	5.0	.0	2.0	.0
EXHAUST TEMPERATURE, F	1198	1132	1164	1050	1159	1026

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	104.01	104.02	105.01	105.02	106.01	106.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/30/78	1/30/78	1/30/78	1/30/78	1/30/78	1/30/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	29	29	29	29	29	29
TEMPERATURE, F	75	75	75	75	74	74
ENGINE SPEED, RPM	3800	3800	3800	3800	3800	3800
TORQUE, FT-LB	73.5	73.5	30.6	30.6	12.3	12.3
POWER, BHP*	51.5	51.5	21.5	21.5	8.6	8.6
FUEL RATE, LB/HR	24.9	24.9	14.7	14.8	11.5	11.6
IGNITION TIMING, DEG BTDC	45.0	45.0	51.0	51.0	51.0	51.0
MANIFOLD VACUUM, IN HG	6.2	6.2	14.5	14.5	17.0	17.0
THROTTLE ANGLE, DEG	41.5	41.5	23.0	23.0	18.5	18.5
INTAKE MAN. TEMP., F	166	166	165	165	164	164
CONCENTRATIONS, DRY BASIS						
CO, %	.0880	.0077	.1782	.0075	.2189	.0073
CO2, %	13.78	14.10	14.42	14.67	14.29	14.38
O2, %	1.68	1.59	1.11	.96	1.21	1.06
HC, PPMC	528	34	871	41	568	32
NOX, PPM	2737	2737	1194	1214	414	428
AIR/FUEL RATIO	16.00	16.01	15.43	15.49	15.48	15.54
EMISSION RATES, G/HR						
CO	142.1	12.2	161.5	6.8	156.7	5.3
HC	42.9	2.8	39.6	1.9	20.4	1.2
NOX+	598.4	590.4	146.5	149.4	40.1	42.2
OIL TEMPERATURE, F	248	248	242	242	233	233
OIL PRESSURE, PSI	36	36	36	36	36	36
COOLANT TEMPERATURE, F	192	192	192	192	191	191
EXHAUST PRESSURE, IN. H2O	50.0	20.0	15.0	4.0	7.0	1.0
EXHAUST TEMPERATURE, F	1349	1287	1249	1181	1220	1120

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	107.01	107.02	109.01	109.02	110.01	110.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/30/78	1/30/78	1/30/78	1/30/78	1/30/78	1/30/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	29	29	29	29	29	29
TEMPERATURE, F	74	74	76	76	76	76
ENGINE SPEED, RPM	3800	3800	4400	4400	4400	4400
TORQUE, FT-LB	8.7	8.7	65.8	65.8	27.4	27.4
POWER, BHP*	6.1	6.1	53.4	53.4	22.2	22.2
FUEL RATE, LB/HR	10.6	10.6	27.8	27.8	17.3	17.3
IGNITION TIMING, DEG BTDC	51.0	51.0	49.0	49.0	52.0	52.0
MANIFOLD VACUUM, IN HG	17.5	17.5	6.5	6.5	14.5	14.5
THROTTLE ANGLE, DEG	17.0	17.0	44.5	44.5	26.0	26.0
INTAKE MAN. TEMP., F	169	169	171	171	173	173
CONCENTRATIONS, DRY BASIS						
CO, %	.2166	.0074	.0980	.0077	.1619	.0075
CO2, %	14.05	14.23	13.74	14.07	14.57	14.90
O2, %	1.29	1.09	1.48	1.45	.95	.76
HC, PPMC	498	35	342	25	495	26
NOX, PPM	296	297	2780	2775	1323	1354
AIR/FUEL RATIO	15.56	15.57	15.87	15.92	15.36	15.35
EMISSION RATES, G/HR						
CO	144.9	5.0	177.1	13.8	171.5	7.9
HC	16.7	1.2	31.1	2.3	26.3	1.4
NOX+	26.8	27.1	679.9	670.3	189.7	192.4
OIL TEMPERATURE, F	229	229	260	260	254	254
OIL PRESSURE, PSI	36	36	36	36	36	36
COOLANT TEMPERATURE, F	191	191	193	193	193	193
EXHAUST PRESSURE, IN. H2O	4.0	.0	62.0	26.0	20.0	6.0
EXHAUST TEMPERATURE, F	1214	1087	1420	1375	1321	1269

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	111.01	111.02	112.01	112.02	113.01	113.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	1/30/78	1/30/78	1/30/78	1/30/78	1/30/78	1/30/78
BAROMETER, MMHG	752.4	752.4	752.4	752.4	752.4	752.4
HUMIDITY, GRAINS/LB	55	29	29	29	36	36
TEMPERATURE, F	75	75	75	75	74	74
ENGINE SPEED, RPM	4400	4400	4400	4400	4650	4650
TORQUE, FT-LB	12.9	12.9	11.5	11.5	109.0	109.0
POWER, BHP*	10.4	10.5	9.3	9.3	93.5	93.5
FUEL RATE, LB/HR	14.0	14.0	13.3	13.3	49.4	49.2
IGNITION TIMING, DEG BTDC	52.0	52.0	52.0	52.0	35.0	35.0
MANIFOLD VACUUM, IN HG	17.0	17.0	17.5	17.5	1.5	1.5
THROTTLE ANGLE, DEG	21.5	21.5	21.0	21.0	76.0	76.0
INTAKE MAN. TEMP., F	173	173	173	173	96	96
CONCENTRATIONS, DRY BASIS						
CO, %	.2528	.0084	.2651	.0130	4.6600	4.3254
CO2, %	14.90	15.13	14.64	15.12	11.19	11.55
O2, %	.79	.53	.70	.52	.18	.11
HC, PPMC	377	21	420	19	1718	920
NOX, PPM	553	521	429	394	1097	1115
AIR/FUEL RATIO	15.19	15.17	15.13	15.16	12.77	12.95
EMISSION RATES, G/HR						
CO	210.0	7.0	212.6	10.3	12977.1	12035.2
HC	15.7	.9	16.9	.7	240.3	128.6
NOX+	69.3	59.1	46.6	42.3	424.9	431.7
OIL TEMPERATURE, F	246	246	244	244	231	231
OIL PRESSURE, PSI	36	36	36	36	36	36
COOLANT TEMPERATURE, F	193	193	193	193	193	193
EXHAUST PRESSURE, IN. H2O	11.0	.0	10.0	.0	120.0	75.0
EXHAUST TEMPERATURE, F	1290	1195	1281	1185	1470	1381

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	115.01	115.02	117.01	117.02	118.01	118.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	2/ 2/78	2/ 2/78	2/ 2/78	2/ 2/78	2/ 2/78	2/ 2/78
BAROMETER, MMHG	753.1	753.1	753.1	753.1	753.1	753.1
HUMIDITY, GRAINS/LB	15	15	15	15	15	15
TEMPERATURE, F	63	63	63	63	64	64
ENGINE SPEED, RPM	1000	1000	2000	2000	2000	2000
TORQUE, FT-LB	64.0	64.0	50.4	50.4	12.6	12.6
POWER, BHP*	11.7	11.7	18.5	18.5	4.6	4.6
FUEL RATE, LB/HR	5.7	5.7	9.8	9.8	5.5	5.5
IGNITION TIMING, DEG BTDC	30.0	30.0	40.0	40.0	40.0	40.0
MANIFOLD VACUUM, IN HG	7.0	7.0	10.0	10.0	18.0	18.0
THROTTLE ANGLE, DEG	12.5	12.5	19.0	19.0	9.5	9.5
INTAKE MAN. TEMP., F	121	121	140	140	150	150
CONCENTRATIONS, DRY BASIS						
CO, %	.0621	.0008	.0963	.0007	.2208	.0007
CO2, %	13.67	13.73	13.42	13.73	13.52	14.09
O2, %	2.19	2.15	2.59	2.29	2.38	1.90
HC, PPMC	2462	141	1503	79	2312	98
NOX, PPM	1012	882	687	744	134	157
AIR/FUEL RATIO	16.10	16.36	16.49	16.47	16.14	16.13
EMISSION RATES, G/HR						
CO	22.8	.3	62.7	.5	79.0	.2
HC	45.3	2.6	49.1	2.5	41.6	1.8
NOX+	47.5	42.1	57.3	61.4	6.1	7.1
OIL TEMPERATURE, F	193	193	210	210	217	217
OIL PRESSURE, PSI	28	28	32	32	32	32
COOLANT TEMPERATURE, F	190	190	189	189	190	190
EXHAUST PRESSURE, IN. H2O	2.0	.0	8.0	1.0	2.0	.0
EXHAUST TEMPERATURE, F	812	728	1072	970	1013	972

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	119.01	119.02	121.01	121.02	122.01	122.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	2/ 2/78	2/ 2/78	2/ 2/78	2/ 2/78	2/ 2/78	2/ 2/78
BAROMETER, MMHG	753.1	753.1	753.1	753.1	753.1	753.1
HUMIDITY, GRAINS/LB	15	15	15	15	15	15
TEMPERATURE, F	64	64	65	65	66	66
ENGINE SPEED, RPM	2000	2000	3200	3200	3800	3800
TORQUE, FT-LB	7.0	7.0	49.9	49.9	91.9	91.9
POWER, BHP*	2.6	2.6	29.2	29.2	63.9	63.9
FUEL RATE, LB/HR	4.4	4.4	15.6	15.5	30.4	30.3
IGNITION TIMING, DEG BTDC	40.0	40.0	47.0	47.0	31.0	31.0
MANIFOLD VACUUM, IN HG	21.5	21.5	11.5	11.5	3.2	3.2
THROTTLE ANGLE, DEG	7.0	7.0	25.0	25.0	56.0	56.0
INTAKE MAN. TEMP., F	147	147	148	148	143	143
CONCENTRATIONS, DRY BASIS						
CO, %	.2124	.0008	.1155	.0009	.1511	.0013
CO2, %	13.87	14.28	13.64	13.92	13.50	13.77
O2, %	1.94	1.68	1.36	1.09	1.60	1.31
HC, PPMC	1061	73	1133	57	389	29
NOX, PPM	425	419	1847	1944	2812	2841
AIR/FUEL RATIO	15.96	15.97	15.66	15.64	15.95	15.84
EMISSION RATES, G/HR						
CO	59.7	.2	117.2	.9	302.7	2.6
HC	15.0	1.0	57.7	2.9	39.2	2.8
NOX+	15.3	15.0	240.2	250.8	722.2	722.5
OIL TEMPERATURE, F	212	212	242	242	255	255
OIL PRESSURE, PSI	32	32	35	35	35	35
COOLANT TEMPERATURE, F	190	190	193	193	191	191
EXHAUST PRESSURE, IN. H2O	1.0	.0	18.0	3.0	76.0	31.0
EXHAUST TEMPERATURE, F	924	903	1250	1208	1462	1386

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	123.01	123.02	124.01	124.02	125.01	125.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	2/ 2/78	2/ 2/78	2/ 2/78	2/ 2/78	2/27/78	2/27/78
BAROMETER, MMHG	753.1	753.1	753.1	753.1	740.5	740.5
HUMIDITY, GRAINS/LB	15	15	15	15	50	50
TEMPERATURE, F	69	69	70	70	67	67
ENGINE SPEED, RPM	4400	4400	4400	4400	1000	1000
TORQUE, FT-LB	82.3	82.3	65.8	65.8	64.6	64.6
POWER, BHP*	66.3	66.3	53.0	53.0	12.2	12.2
FUEL RATE, LB/HR	33.6	33.6	27.6	27.6	5.7	5.7
IGNITION TIMING, DEG BTDC	34.0	34.0	49.0	49.0	29.0	29.0
MANIFOLD VACUUM, IN HG	3.5	3.5	6.5	6.5	6.0	6.0
THROTTLE ANGLE, DEG	57.0	57.0	44.0	44.0	14.0	14.0
INTAKE MAN. TEMP., F	149	149	157	157	134	134
CONCENTRATIONS, DRY BASIS						
CO, %	.2048	.0107	.0969	.0012	.0008	.0008
CO2, %	13.80	14.08	13.37	13.48	13.29	13.29
O2, %	1.13	.93	1.72	1.70	1.59	1.59
HC, PPMC	280	26	264	25	74	74
NOX, PPM	2734	2620	2936	2924	996	996
AIR/FUEL RATIO	15.57	15.54	16.09	16.15	16.01	16.02
EMISSION RATES, G/HR						
CO	443.5	23.1	179.3	2.2	.3	.3
HC	30.4	2.8	24.5	2.3	1.4	1.4
NOX+	759.0	724.3	696.3	692.5	56.6	56.6
OIL TEMPERATURE, F	274	274	279	279	199	199
OIL PRESSURE, PSI	35	35	35	35	30	30
COOLANT TEMPERATURE, F	195	195	194	194	192	192
EXHAUST PRESSURE, IN. H2O	92.0	41.0	64.0	25.0	1.0	1.0
EXHAUST TEMPERATURE, F	1534	1505	1431	1386	857	857

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	126.01	126.02	127.01	127.02	128.01	128.02
DATA SOURCE CODE	1	2	1	2	1	2
TEST DATE	2/27/78	2/27/78	2/27/78	2/27/78	2/27/78	2/27/78
BAROMETER, MMHG	740.5	740.5	740.5	740.5	740.5	740.5
HUMIDITY, GRAINS/LB	50	50	50	50	50	50
TEMPERATURE, F	83	83	77	77	79	79
ENGINE SPEED, RPM	1000	1000	1500	1500	1500	1500
TORQUE, FT-LB	43.0	43.0	84.7	84.7	67.8	67.8
POWER, BHP*	8.1	8.1	24.0	24.0	19.3	19.3
FUEL RATE, LB/HR	4.5	4.5	10.8	10.7	9.2	9.2
IGNITION TIMING, DEG BTDC	35.0	35.0	21.0	21.0	26.0	26.0
MANIFOLD VACUUM, IN HG	12.5	12.5	3.5	3.5	5.0	5.0
THROTTLE ANGLE, DEG	7.5	7.5	28.0	28.0	23.0	23.0
INTAKE MAN. TEMP., F	172	172	158	158	181	181
CONCENTRATIONS, DRY BASIS						
CO, %	.0102	.0102	.0102	.0010	.0102	.0011
CO2, %	13.95	14.49	13.13	13.23	12.59	12.75
O2, %	.56	.12	1.86	1.73	2.63	2.41
HC, PPMC	2477	88	1086	49	1145	55
NOX, PPM	2397	1586	1375	1419	605	634
AIR/FUEL RATIO	15.02	14.93	16.11	16.14	16.72	16.69
EMISSION RATES, G/HR						
CO	2.9	2.9	7.5	.8	6.7	.7
HC	35.5	1.2	40.2	1.8	37.7	1.8
NOX+	100.8	65.3	149.1	153.1	58.4	60.9
OIL TEMPERATURE, F	202	202	220	220	222	222
OIL PRESSURE, PSI	28	28	30	30	30	30
COOLANT TEMPERATURE, F	191	191	191	191	187	187
EXHAUST PRESSURE, IN. H2O	1.0	.0	10.0	1.0	8.0	1.0
EXHAUST TEMPERATURE, F	803	779	1120	1027	1059	1002

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

ENGINE: PONTIAC 151-CID
FUEL CODE: 7718

TEST NUMBER	129.01	129.02
DATA SOURCE CODE	1	2
TEST DATE	2/27/78	2/27/78
BAROMETER, MMHG	740.5	740.5
HUMIDITY, GRAINS/LB	50	50
TEMPERATURE, F	81	81
ENGINE SPEED, RPM	2000	2000
TORQUE, FT-LB	75.6	75.6
POWER, BHP*	28.6	28.6
FUEL RATE, LB/HR	13.0	13.0
IGNITION TIMING, DEG BTDC	31.0	31.0
MANIFOLD VACUUM, IN HG	5.3	5.3
THROTTLE ANGLE, DEG	27.5	27.5
INTAKE MAN. TEMP., F	188	188
CONCENTRATIONS, DRY BASIS		
CO, %	.0102	.0012
CO2, %	13.11	13.35
O2, %	1.74	1.50
HC, PPMC	1051	44
NOX, PPM	1615	1676
AIR/FUEL RATIO	16.04	15.97
EMISSION RATES, G/HR		
CO	9.1	1.0
HC	46.8	1.9
NOX+	210.9	216.6
OIL TEMPERATURE, F	247	247
OIL PRESSURE, PSI	30	30
COOLANT TEMPERATURE, F	190	190
EXHAUST PRESSURE, IN. H2O	14.0	1.0
EXHAUST TEMPERATURE, F	1174	1143

* CORRECTED SAE J816B
+ CORRECTED FOR HUMIDITY

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